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ABSTRACT

In response to the philosophy of vocational education outlined by the National Advisory Council, the Greenwood Public School Administration drew up this proposal for a new educational structure. Designed to prepare students for the world of work through a comprehensive orientation process involving practical arts, vocational education, and guidance, the program is justified by the cultural and economic deprivation, and the high dropout rate in Greenwood schools. The purpose of the elementary industrial arts phase is to introduce pupils to the world of work. Grades 7-8 provide students with exploratory experiences and are prevocational in nature, and the high school offers a complete vocational education program. A comprehensive study of modern industry and occupational orientation is provided for in Grade 9, followed by mechanical drawing in Grade 10. Vocational part-time cooperative education and vocational counseling are integral parts of the program. It is recommended that as much of the program be put into effect each year as qualified staff, facilities, and finances will allow. A detailed course sequence is provided in the appendixes. (GEB)

A COMPREHENSIVE ORIENTATION TO THE WORLD OF WORK THROUGH INDUSTRIAL ARTS AND VOCATIONAL EDUCATION

(Grades 1 - 12)

Greenwood Public Schools
Greenwood, Mississippi
July 1970

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Appreciation is expressed to Mr. Danny Hardin, City Director of Industrial Arts and Vocational Education, for his help in coordinating the activities of the study with Greenwood City Schools. The principal investigators recognize his contribution to the success of this study and to the success of vocational and practical arts education in the city schools.

Acknowledgment is extended to Mr. B. C. Messer, State Supervisor for Trade and Industrial Education, and Mr. Larry Godfrey, State Supervisor for Industrial Arts, for their encouragement and helpful suggestions.

- FOREWORD -

The Greenwood City Schools are recognized as one of the outstanding public school systems in the state of Mississippi. The progress which has been achieved has resulted, to a great extent, from effective leadership on the part of Superintendent W. B. Dribben and his staff. A strong feature of this leadership has been the cultivation and development of intense community interest and pride in the public schools. The Greenwood community has accepted and continues to discharge the responsibility of providing an environment which inspires a high degree of excellence in its public education program. The prime factors of this environment are a strong school board, able administration and faculty, outstanding facilities and ample operating budgets.

An environment of this kind is conducive to progress and encourages innovative thinking and doing on the part of administrative staff and faculty. Such an environment encourages a positive faculty attitude, which includes a tendency to be keenly aware of the needs of all pupils and a desire to meet these needs.

It is this awareness of pupil needs which has prompted an extensive examination of the total educational program in an effort to make adjustments which are necessary to meet the contemporary needs of the public school population.

There are indications that the basic philosophy of the Greenwood City Schools is changing from an over-emphasis on college preparatory programs to appropriate concern for curriculum enrichment which will provide opportunity for occupational orientation and preparation in accord with pupil needs and the requirements of the world of work. It is in this setting that the study described in the following pages was made. The assignment was to "design a comprehensive orientation to and preparation for the world of work." (See Appendix A for Grant Application which ultimately brought about project funding.)

The reader is invited to examine very carefully the content of the report with special attention being given to industrial arts in grades 1-6, occupational orientation (occupational exploration) in grades 7, 8 and 9, interpretation of modern industry in grades 7, 8 and 9, vocational guidance and program flexibility in grades 10, 11 and 12. These segments of the program depart from conventional procedure and merit special attention and nurture on the part of those responsible for administration and leadership.

This study is strongly concerned with industrial arts and vocational education. It necessarily follows, therefore, that only minimal references are made to other aspects of the total curriculum. This is done for the purpose of showing how all areas can be satisfactorily merged.

Special attention is called to the emphasis on occupational orientation in the 7th, 8th and 9th grades. This emphasis is based on the philosophy that our young people are most receptive at this age level and that effective occupational orientation experiences at this point should result in realistic educational and career planning.

It should be pointed out that the success of the program which is outlined and described on the following pages will depend upon the degree to which the community, school board, administrative officers and faculty accept the responsibility of providing an environment in which the recommended curriculum changes can be implemented. Such an environment will feature built-in motivating factors designed to encourage faculty members to take advantage of opportunities to develop the expertise they will need through in-service workshops and extension courses which will be made available to them.

If success can be achieved, great rewards will accrue to the young people of Greenwood in that they will be prepared to satisfactorily adjust to the environment into which they will emerge upon leaving the public schools. This strongly includes ability to qualify for the employment opportunities which will be available to them.

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INTRODUCTION

Public education must provide youth with a background of knowledge, experience, and guidance that will allow them to take their place as a productive citizen in American society. A program which accomplishes this goal must prepare students to enter colleges, universities, vocational-technical schools, and the world of work. This educational process must be broad enough to provide preparation for local state and national employment opportunities.

Basic Justification

The following is a basic justification for a program which will provide an equitable entry into the world of work for all students in the Greenwood City School System.

Cultural and Economic Deprivation

American society in its rapid development has by-passed large segments of the population. These individuals are bound in poverty and cultural deprivation because they do not possess the knowledge and skills demanded by today's technological economy. The mechanization of industry and agriculture has created a plethora of opportunity for the educated individual but has little to offer the unschooled. The Mississippi Delta, traditionally an agricultural area,

no longer needs uneducated farm labor. Greenwood City Schools are now faced with the problem of providing an education that will prepare these displaced individuals to be productive, self-respecting, self-supporting citizens in contemporary society.

High Dropout Rate

The Greenwood City School System experiences a high dropout rate beginning in the elementary schools. It is believed that this is largely due to a lack of understanding concerning the educational requirements necessary for occupational entry into today's technological society.

Public schools are charged with the responsibility of developing in each student the concepts and attitudes which will guide them through lives that are satisfying to the individual and beneficial to society. To fulfill this responsibility, schools must offer programs which are realistic and meaningful to students and that will hold the students in school. Programs with this holding power must provide for an introduction to today's technological society and the opportunity to explore its many ramifications.

Purpose

The major purpose of this study is to develop a program which will introduce all students to the "world of work." This will be accomplished through the use of practical arts,

vocational education and guidance. The program will be of equal educational value to college-bound students and to students who can benefit from vocational training for entry into the labor force.

The study will explore means of effectively integrating a program which will provide a comprehensive introduction to the world of work with the traditional program of the Greenwood City Schools. The major problem in the development of such a program will be determining how to educate students for entry into the various facets of the world of work at all employment levels and at the same time provide equitable educational opportunity for all students.

To accomplish this goal all students must be given the opportunity to explore their capabilities so that they may make meaningful decisions concerning their choice of a life's work. Once these decisions have been made, public education must provide a program which will facilitate these accomplishments.

In developing a program which will accomplish this desirable end, several questions must be raised for consideration. Some of these questions are:

1. What are the educational needs of the student body in terms of employment opportunities in the service area of the school system?
2. How can the needs of the students be most effectively met by the teachers and supportative staff?

3. How can the existing educational facilities best be utilized?
4. How can the curriculum be strengthened to meet emerging educational needs.

General Purposes

A major part of the overall purpose of this project is to develop an industrial arts and vocational education program for grades 1-12 which will effectively prepare people for living and working in a modernized agricultural and industrial economy. The following more specific purposes will describe the program in more detail.

Grades 1-6

In grades 1-6 the purpose of the program is to introduce and explore the world of work through an integrated industrial arts approach. This will be accomplished through the combined effort of all elementary teachers, elementary industrial arts specialists, and guidance counselors.

Grades 7-8

The purpose of 7th and 8th grade industrial arts is to develop an understanding and appreciation of modern industry—its materials, methods, processes—and its place in our technical society. This can be accomplished through the use of tools and machines in the processing of industrial

materials. These industrial arts activities in grades 7 and 8 will be strongly directed toward pre-vocational orientation. This will be accomplished through the combined effort of the industrial arts supervisor, industrial arts teachers, and guidance counselors.

Senior High School

The senior high school industrial education program has a two-fold purpose. It must serve both the vocational and general education needs of the students.

The purpose of the vocational program will be to provide an opportunity for the development of skills and the acquisition of technical knowledge which will prepare an individual for successful entrance into and progress in an occupation of his choice. This will be accomplished by participation in skills development courses. These courses should be established on the basis of an occupational survey conducted in the service area of the Greenwood schools which will identify existing and potential employment opportunities.

Vocational education can be given successfully only to those who need, want, and are capable of profiting from the experience. Therefore, occupational choice should be based upon acceptable guidance procedures.

Industrial arts should be provided for those high school students who do not desire or cannot profit from

vocational education. This program will be a means of continuing and expanding an understanding of the industrial world of work. The following classification of students as outlined in A Guide to Improving Instruction in Industrial Arts[1] will be served:

1. Students who wish to explore more deeply the educational, cultural, and consumer aspects of American industry.
2. Students planning to pursue advanced study and careers in areas such as applied and technical sciences.

Adult Education

Although the designated purpose of this proposal does not encompass the training and retraining needs of employed adults, this important phase of vocational education should continue to receive high priority.

School and Community Needs

In developing a total industrial arts and vocational education plan for a particular school system, several interrelated aspects of school and community must be taken into consideration. This includes data about school age population, attendance centers, dropouts, and industrial

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[1] A Guide to Improving Instruction in Industrial Arts, AVA, 1968, pp. 13-14.

and occupational needs. Although these various aspects of the school and community are interrelated, they will be dealt with under separate topical headings for quick reference purposes.

School Age Population

A November, 1969, analysis of enrollments showed a total of 5,647 students in the Greenwood City Public School System. Of this number, 1,504 students attended two high schools (grades 9-12) and 4,143 students attended the six elementary schools (various combinations of grades 1-8). In accordance with the approved zoning plan, the potential enrollment for September, 1970, is 5,928. Of this number, 1,508 students would be in high school (grades 9-12) and 4,420 students would be in the elementary schools (various combinations of grades 1-8). The projected September, 1970, enrollment does not take into consideration the effect of the growing private school movement. Indications are, however, that the school enrollment will be somewhat less than the projected 5,928 students. For an analysis of present and projected enrollments by schools, refer to Table 1 on page 8.

In a recent survey Schmitt[2] reported that 97% of the schools in the United States with enrollments in excess of

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[2]M. L. Schmitt and A. L. Pelley, Industrial Arts Education, A Survey of Programs, Teachers, Students, and Curriculum. U.S. Office of Education, 1966, p. 5.

TABLE 1

ANALYSIS OF ENROLLMENT BY SCHOOL
NOVEMBER, 1969, VS. SEPTEMBER, 1970, POTENTIAL

Name	Zone	November, 1969 Grades	November, 1969 Enrollment	September, 1970 Grades	September, 1970 Enrollment
High Schools					
Greenwood H.S.	I-V	9-12	849	9-12	1038
Threadgill H.S.	III, IV, V	9-12	655	9-10	470
High School Totals			1504		1508
Elementary Schools					
Davis Elem.	I	1-8	762	1-8	1052
Bankston Elem.	II	1-8	850	1-8	824
Williams Elem.	III	1-6	252	1-8	370
McNeace Elem.	IV	1-2	417	1-3	488
Stone St. Elem.	IV	3-6	990	4-8	802
Threadgill Elem.	V	1-8	872	1-8	884
Elementary School Totals			4143		4420
Grand Totals			5647		5928

750 have an industrial arts program. The majority of the Greenwood schools fall into this category. Schmitt asserted that the larger schools afford students a good opportunity to study the impact of technology upon our society through their industrial arts programs. He further stated that the high percentage of industrial arts found in junior and senior high schools is due to the general acceptance of the talent discovery function that industrial arts performs in the beginning grades of the secondary schools.

Industrial arts plays a vital role in preparing individuals to live in our technological society. An evolving approach to introducing students to this technological society is through the interpretation of modern industry. Vocational education, on the other hand, should prepare the student for occupational entrance into the world of work. According to the National Advisory Council on Vocational Education, this preparation should be emphasized on the high school level. Advisory Council Chairman Calkins stated that:

> We believe that the reform of American schools the Nation so desperately needs will not come about if the Federal government continues to invest nearly $4 million in remedial manpower programs for each $1 million it invests in preventive vocational programs.[3]

Based on this and similar reports, it does not seem that a total program of industrial arts and vocational education for Greenwood should be questioned. Rather, the question seems to be how such a program can best be implemented.

Attendance Centers

Industrial arts in grades 1-6 can be taught in the regular classroom setting by the elementary school teacher. This arrangement adapts itself to any school and class size

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[3]Hugh Calkins, Annual Report, National Advisory Council on Vocational Education, U.S. Office of Education, 1969, p. 3.

since a separate laboratory is not required. A variation of this approach would provide for a separate industrial arts classroom-laboratory combination in grades 5 and 6. This variation would be consistant with the departmentalization concept presently subscribed to by the Greenwood Public School System. In either case, industrial arts (grades 1-6) can function well under the proposed zoning guidelines in the six Greenwood elementary schools. Implementation of these program variations are described in Chapter III.

Industrial arts in grades 7-8 should be taught in a separate laboratory by a certified industrial arts instructor. A full time instructor can effectively teach approximately 120 students per day. Implementing an industrial arts program should present no problem in Davis, Bankston, Stone Street, and Threadgill elementary schools since the total projected enrollment in each case is in excess of 800 students. This number of students should provide a large enough base from which to provide a sufficient teacher load. This would, however, present a problem at Williams Elementary School with a projected enrollment for September, 1970, of only 370 students. Therefore, it would be difficult to justify the employment of an industrial arts instructor full time. Furthermore, it would be economically impractical to build and equip an industrial arts laboratory for such a small enrollment. Neither would it be feasible to build, equip, and staff a home economics

laboratory for this small number of students. Implementation of an industrial arts program in grades 7 and 8 is described in Chapter IV.

Industrial arts and vocational education in the high school should provide the secondary school student with technological experiences relating to the world of work. The implementation of career choices must be an important part of the high school program. The Greenwood High School has the potential of being comprehensive in scope and thereby providing students with academically or vocationally oriented backgrounds which will prepare them for college or the world of work in accordance with their aptitudes and vocational interests. Industrial arts and vocational education for Greenwood High School (grades 9-12) and for Threadgill Junior High School (grades 9-10) is described in Chapter V.

Dropouts

The failure of schools to retain students seems to be a local, state, and national problem. The National Advisory Council report stated that:

> Each year the ranks of the school dropouts increase by three-quarters of a million young men and women. They enter the job market without the skills and attitudes employers require. They and the millions of others who are under-employed—among these the students who are graduates of our high schools but who are inadequately prepared

> for anything—are tragic evidence of the present inadequacy of our educational system.[4]

The Council further states that at the very heart of the drop-out and under-employment problem is the national attitude that vocational education is designed for somebody else's children and that the only good education is an education capped by four years of college. This idea, transmitted by our values and our silent support is a revelation of why schools fail to meet the needs of so many students.

The Greenwood Public School System, as most school systems in the State of Mississippi, has a drop-out problem. The percentage of Mississippi children, by county, who enter the second grade but do not enter college ranges from 56 to 91 percent.[5]

In the Greenwood Public Schools, the average percentage of students who entered the first grade but failed to graduate from high school over the past six years was 59.9 percent. This percentage for the 1968-69 school year was 47.3 percent. The average percentage of drop-outs over the past six years was 42 percent in non-target schools and 64 percent in target schools.

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[4] Ibid., p. 1.

[5] Mississippi State Plan for the Administration of Vocational Education. Mississippi State Board for Vocational Education, Jackson, Mississippi, 1969, pp. II-5.

The Greenwood Public Schools conducted a survey in 1967 to determine reasons why students in target schools dropped out of school. In grades 1-8 the major reasons given, in order of frequency, were economic, academic difficulty, needed at home, dislike of school experiences, and behavioral difficulty. In grades 9-12 the major reasons given, in order of frequency, were dislike of school experiences and behavioral difficulty. A similar survey taken in 1968 showed that twice as many students dropped out of school because of dislike of school experiences than for any other single reason.

The major reason students drop out of the Greenwood Public School System seems to be that the school does not provide them with the necessary guidance and/or curriculum to satisfy their needs and desires. This, in turn, brings about behavioral difficulties and a dislike for school. This report stresses the need for a comprehensive school system which includes sufficient vocational guidance to assist the student in selecting a curriculum which will meet his educational needs to the extent that the tendency to drop out will be eliminated.

Industrial and Occupational Needs

Educational programs involving practical arts generally and vocational education specifically should be based on local, state, and national needs. These needs should be

identifiable in terms of employment opportunities for program graduates.

The eight major manufacturing industries in the Greenwood area employ approximately 2,300 workers. The majority of these jobs are filled by skilled and semi-skilled employees in occupational areas involving the use of metals and woods as industrial materials. Specific job titles call for machinists, machine operators, welders, electronic technicians, and assembly personnel.

The total population of this area is 23,000 with a projected increase to 26,000 by 1974. Approximately 40 percent of the present population is economically disadvantaged.

The 1969 Cooperative Area Manpower Planning System (CAMPS) report shows that approximately 60 percent of the people in the Mississippi Delta are employed as nonagricultural wage and salaried workers. Approximately 40 percent of these nonagricultural workers are employed in manufacturing industries.

Both the CAMPS and local surveys reflect a need for the training of persons to fill jobs in business and office occupations, metal and building trades, sales and service occupations, and domestic work. Greenwood schools are presently offering educational opportunities in these areas.

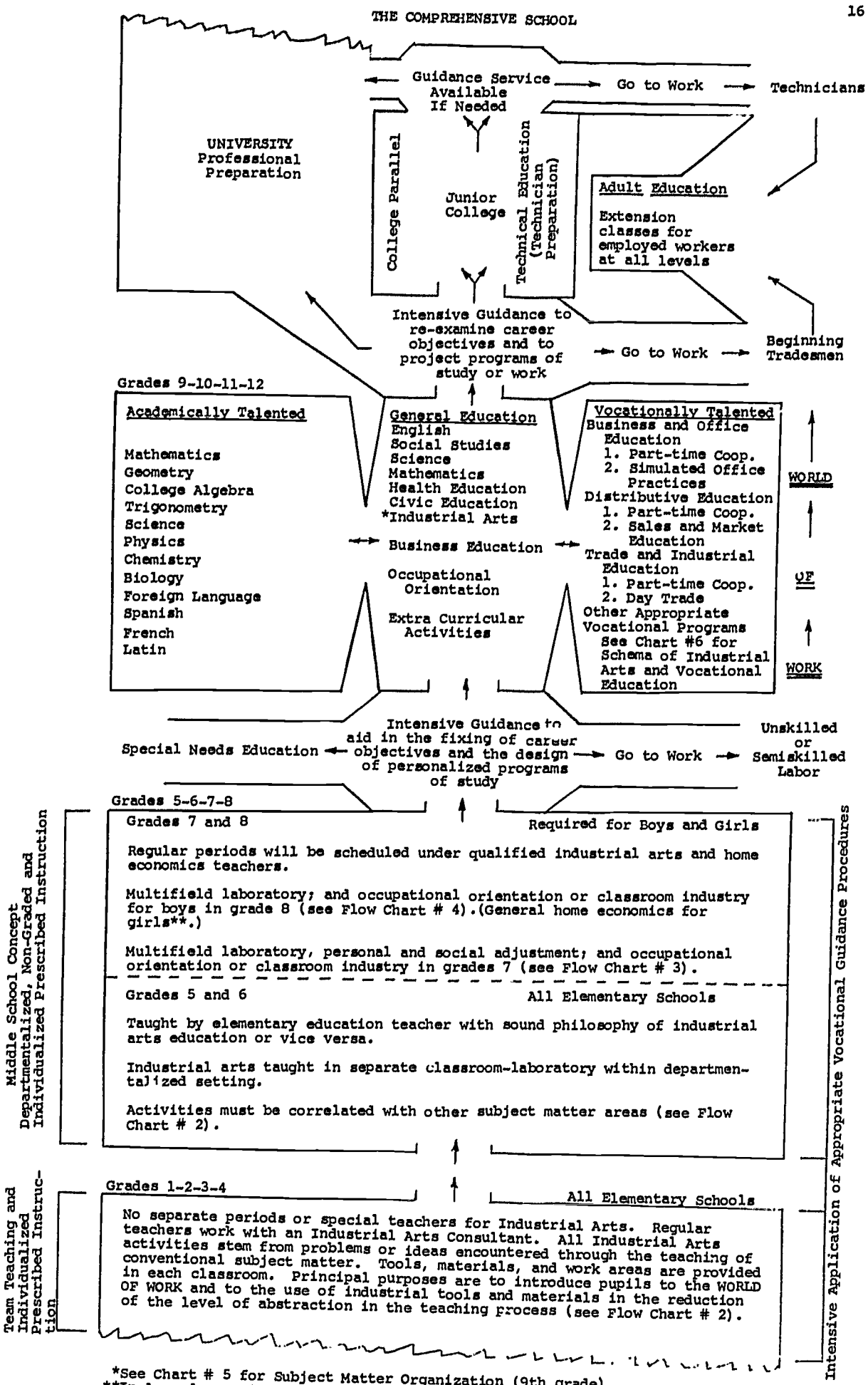
There also seem to be a large number of job opportunities in the chemical, transportation, and public utility

industries.

At the time of this writing, the Greenwood and Leflore County School Systems were in the process of conducting their own survey to determine the vocational education needs of employers in the Leflore County area. The findings of this survey should help provide the rationale upon which to build a sound vocational education program.

Program for Greenwood City Schools

The reader is invited to examine the schematic representation of the program which has been designed for the Greenwood City Schools (see Flow Chart # 1, page 16). This program is fully described in the remaining pages of this report.



*See Chart # 5 for Subject Matter Organization (9th grade).
**In Accordance with Course Objectives as Specified by Greenwood School Officials.

FLOW CHART # 1

CHAPTER II

INDUSTRIAL ARTS IN GREENWOOD CITY SCHOOLS (Grades 1-8)

Overall Purpose

The general purpose of industrial arts in the elementary grades is to introduce pupils to the world of work and to reduce the level of abstraction in the teaching process. It should not be considered as an additional course but rather as supplementary activities involving the use of industrial tools and materials which will enrich the teaching process and provide strong pupil motivation to learning. Nor should it be considered just as a matter of making things.

All projects or construction activities should stem from that which is being taught as a regular part of the curriculum and should be designed to bring to life some aspect of textbook content which would otherwise be left to the imagination of the pupil.

> A study by W. R. Hoots, Jr., of East Carolina University, at Greenville, showed positively that elementary textbooks include many references to technology and industry, thus showing the way to correlating industrial arts with basic elementary subjects.[1]

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[1]Larry T. Ivey, "Technological Innovation in Elementary Industrial Arts," School Shop, April, 1970, p. 108.

All projects and activities should be designed at levels capable of accomplishment by the age group in question and should provide for successful participation and accomplishment by each pupil in accordance with his ability level. The richness of the program will depend upon the initiative and ingenuity of teachers and their willingness to depart from the conventional pattern of instruction.

The following list of values describes the program in more detail.

1. Reduces the level of abstraction in teaching
2. Involves more of the senses in the learning process
3. Provides more fully for individual differences
4. Motivates learning
5. Provides outlets for inate desires to create
6. Helps establish learning readiness
7. Makes school a more pleasant experience
8. Introduces pupil to the world of work
9. Acquaints pupil with the care and use of common industrial tools and materials
10. Produces an environment which is conducive to the development of desirable social habits and personality characteristics
11. Produces tangible results from pupil effort
12. Provides opportunity for all levels of pupil success in accord with individual differences

13. Gives the child an objective medium for expressing his ideas
14. Provides the child with a manipulative form of creative leisure-time expression.

Several of these values are substantiated in Pershern's study[2] which ascertained the effect industrial arts activities had on achievement and student attitudes in science in grades 4, 5, and 6. The study produced the following conclusions:

1. Students favored the units taught by the experimental method (utilizing integrated industrial arts activities).
2. The science instruction was enjoyed more by the students in the experimental group.
3. The participating teachers agreed that industrial arts activities can enrich the elementary science programs as well as assist clarifying science concepts for the students.

General Purposes for Grade Levels

The following is Houston's explanation of student behavior at various grade levels and the relationship of

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[2]Frank R. Pershern, "The Effect of Industrial Arts Activities on Science Achievement and Attitudes in the Upper Elementary Grades," Unpublished Doctoral Dissertation, Texas A&M University, College Station, Texas, 1967.

this behavior to industrial arts.[3]

These behavior patterns cannot be associated with specific grade levels. However, behavior patterns for a general grade level grouping of K, 1-4, and 5-6 as described below do exist and should be taken into consideration when designing industrial arts activities for the elementary school. This grouping has a direct bearing on the non-graded classroom (grades 1-4) and departmentalized (grades 5-6) portion of the Greenwood Elementary School System which includes grades 1-8.

Kindergarten

As a child reaches this age, he is seldom satisfied with fictitious relationships between his thinking and his creative work. He would like to establish a "real" relationship. In undertaking a study such as this, a primary purpose would be to help each child find and establish real relationships between his thinking and his industrial arts activities.

Grades 1, 2, 3, 4

During this period individual children become more conscious of reality as they attempt to improve relationships between their creative work and whatever it is these works

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[3]F. Dale Houston, Associate Professor of Elementary Education, Mississippi State University (1968 interview).

represent. They have become more aware of their environment through the many experiences to which they have been exposed and their need for self-assurance often becomes a guiding factor in whatever they attempt. A principal purpose during these grades would be to provide opportunities which would allow each child to pursue his own search for self-assurance through industrial arts activities.

Grades 5,6

During this important period of development, children actually lay the ground-work for their ability to work in groups and cooperate as functioning members of our society. During these grades it becomes necessary that in the industrial arts activities as in other activities, the curriculum should be geared to promote and enhance children's desires and needs for group participation.

Various Approaches to Teaching Elementary Industrial Arts

There are various approaches to teaching industrial arts in the elementary school. These include: 1. Elementary industrial arts in the self-contained classroom, 2. Elementary subject matter oriented industrial arts in the departmentalized classroom-laboratory, and 3. Arts and crafts oriented industrial arts in a separate laboratory.

A discussion of each of these approaches follows.

1. Elementary industrial arts in the self-contained classroom. Under this plan, experiences with industrial tools and materials are integrated with conventional subject matter areas. Industrial arts activities stem from problems or ideas encountered and/or inspired through usual teaching procedures and subject matter.

As indicated by Gerbracht, this approach has some advantages and disadvantages.

> Using the classroom has some advantages. For one thing, it is possible for part of the class to be engaged in construction work while other children are doing other things; thus the entire class is under the teacher's control. For another, when construction facilities are present in the classroom, they are more likely to be used as spontaneous need for them develops, producing closer connections with the classroom studies. But there are disadvantages, too. Construction work involves noise, dust, and dirt, and occasionally spilled paint and glue, and construction work requires space which many classrooms cannot spare.[4]

2. Elementary subject matter oriented industrial arts in the departmentalized classroom-laboratory. Under this approach, industrial arts activities are conducted for a specified length of time each day. These activities, however, are correlated with other subject matter areas.

Gerbracht lists some advantages and disadvantages of this approach.

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[4]Carl Gerbracht and R. J. Babcock. Elementary School Industrial Arts, Bruce Publishing Company, Milwaukee, 1969, p. 27.

> The separate industrial arts shop is considered by many people to be preferable. A shop can be equipped more fully than the classroom; indeed, it can be designed specifically for the work to be done. It can include storage space for a variety of materials and supplies than any one classroom can afford to stock, and it can provide work space and storage space for bulky projects. The shop can include machines that would be inappropriate in a classroom because of their cost, noise, and danger.
>
> The only significant disadvantage of a separate shop is the possibility that industrial arts work might deviate from the classroom curriculum, but this danger can be avoided through careful planning by conscientious teachers.[5]

Both of the systems described under (1) and (2) above can function well under adequate supervision. Gerbracht said that "where a specialist (elementary industrial arts consultant) is provided, neither system seems to have great advantages over the other, provided the classroom teacher is involved in determining the class activities."[6]

3. Arts and crafts oriented industrial arts in a separate laboratory. It is administratively possible to teach elementary industrial arts as a completely separate subject matter area.

This, however, is not a desirable approach. In Gerbracht's words,

> Where classroom teachers simply turn their classes over to industrial arts specialists for specific time periods, without regard for the

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[5] Ibid., pp. 27, 28.

[6] Ibid., p. 25.

relationships between the industrial arts work and the normal classroom work, much is lost. Under such conditions, the industrial arts work tends to become an "arts and crafts" activity and loses much of its potential relevance.

Where regular industrial arts periods are established, the industrial arts work tends to assume an independent character, with its own resource units. The following are examples of such units:

Manufacturing in our City
Transportation, Past and Present
Mass Production in America
Electricity as Power
Modern Industrial Materials
Forest Products.

There is no reason why such units cannot be connected to other classroom work, and they should be, for best results.[7]

The keys to a successful elementary industrial arts program seem to be correlation and cooperation.

Recommended Approach for Elementary and Middle School Industrial Arts in Greenwood

Taking into consideration the administrative structure of the Greenwood Elementary School System, the combination approach suggested in this study is designed around the self-contained classroom in grades 1-4 and the departmentalized classroom in grades 5-8. (See Flow Chart # 2, page 25.)

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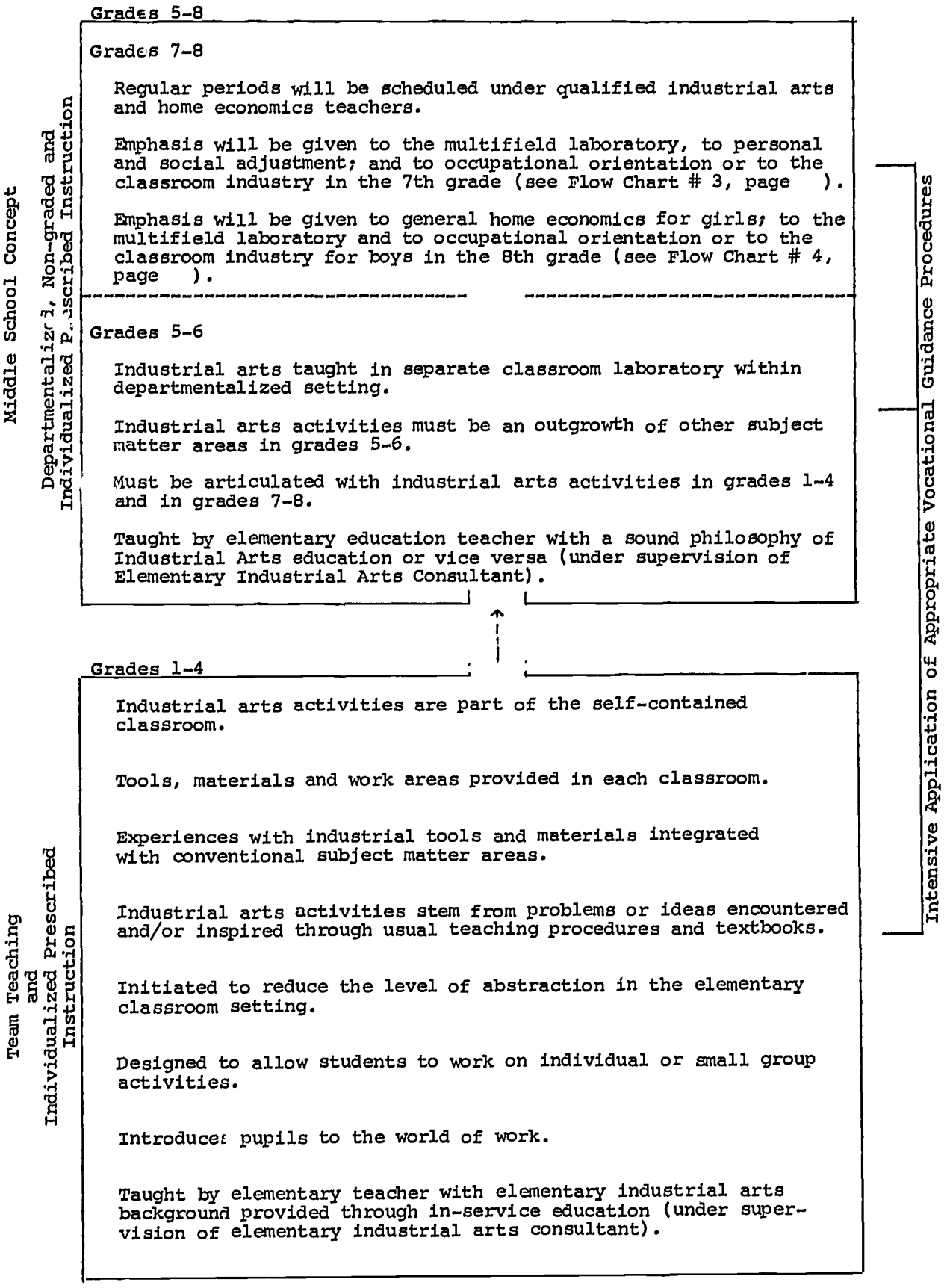
[7] Ibid., p. 28.

PRACTICAL ARTS IN THE ELEMENTARY AND MIDDLE SCHOOL



FLOW CHART # 2

Grades 1-4

In these early elementary grades, industrial arts should complement the various subjects taught by the classroom teacher. For example, while studying a unit on transportation, a part of the class may be developing a bulletin board exhibit on various modes of transportation. Still another group may be building various models representing early transportation by land, air, and sea. All of these activities can be going on simultaneously and be involving many of the 14 values listed earlier.

Grades 5-6

In these higher elementary grades, industrial arts should still complement the various subjects taught by the math, English, social studies, or science teachers. At these grade levels, however, industrial arts may be departmentalized as are the other subject matter areas. The teacher of industrial arts should have a sound philosophy of both industrial arts and elementary education.

Through a combined effort of the elementary industrial arts consultant, the industrial arts teacher, and the teachers of other subject matter areas, a well coordinated program can result. For example, while the student is studying fractions in math, he may be making a segmented fraction wheel out of plywood in industrial arts. When the student is preparing to study plants in science, he may

build a planter box in industrial arts in which to plant various seeds under the supervision of the science teacher. It must be emphasized that the success of this approach will depend on "team planning" on the part of all teachers involved with each student group under the leadership of the industrial arts consultant. Such planning must result in complete correlation between the industrial arts activities and classroom subject matter.

The Middle School Concept

The middle school concept, grades 5, 6, 7 and 8, is emerging on the national scene. At a recent convention, G. C. Simpson, Associate Professor of Educational Administration, State University of New York at New Paltz, reported that over 1000 middle schools are now in operation, 90 percent more than 10 years ago. Compactness of the new elementary unit, he said, provides an opportunity to "upgrade" the total educational product.

The middle school is conceived to be a new approach in providing an educational program designed to meet the needs of the pre-adolescent and early adolescent child. It takes into consideration the earlier maturation of today's youth. Kindred states that:

> As a result (of the earlier maturation) many boys and girls enter puberty in grades five and six. . . .It is felt that fifth- and sixth-graders can profit from learning experiences traditionally allocated to seventh graders in junior high school.

> In further support of this position, children of middle school age appear to have more in common with each other than with elementary school pupils as a group or high school pupils as a group.[8]

In further argument for the middle school, Kindred levels the following criticisms at the junior high school which seem relevant to this study:

> 1. The traditional contention that the junior high school should get pupils ready for the senior high school has meant mastery of content and skills in limited areas at the expense of a broad exploratory type of program.
>
> 2. Recent pressures on the junior high school to place more emphasis upon academic subjects, such as mathematics, science, and foreign languages, have meant less time and energy for fine arts, industrial arts, dramatics, and homemaking—subjects which are equally important in a general education program.[9]

It appears that the middle school concept has much merit. As an administrative unit, it lends itself well to the non-graded approach to teaching. As a whole, this concept seems to fit well into the educational philosophy of the Greenwood Public School System.

Therefore, the departmentalized approach to teaching elementary industrial arts in grades 5 and 6 would adapt itself well to the first two years of the middle school concept. It should be re-emphasized, however, that industrial arts in these two grades must be correlated with 5th and

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[8]Leslie W. Kindred, The Intermediate School (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1968), p. 33.

[9]Ibid., pp. 29-30.

6th grade subject matter rather than considering it a course unto itself.

The Consultant

The industrial arts consultant is a vital factor in the success of the program. His primary responsibility and function are described as follows:

1. He must develop a close working relationship with teachers.
2. He must be an immediately-available consultant to all teachers.
3. He should be in a position to obtain necessary supplies and materials without delay.
4. He should be responsible for tool inventory and maintenance.
5. He must be well versed relative to elementary education and industrial arts.
6. He must promote the total program.
7. He must be a leader and must also be sensitive to leadership abilities of the teachers. He should be able to avoid negative attitudes.
8. He should encourage teachers to share ideas with one another.
9. He must initiate and maintain good public relations activities directed toward in-school and out-of-school publics.

10. He should serve a maximum of 20-25 classrooms.

11. He should have space for office and tool and material storage.

As stated earlier, the success of industrial arts in the elementary school depends largely upon the capabilities of the consultant. Therefore, the first six functions listed above are further developed for emphasis.

1. Teacher relationship. The consultant should direct his attention toward the teacher rather than the student. This approach will enable the teacher to continue to function in the absence of the consultant. It is permissible for the consultant to demonstrate to or work with the class. However, this should provide the teacher with a learning situation rather than with an opportunity to do other things.

2. Immediate availability. The consultant should be available to the teacher on a regular basis. This may be accomplished through a combination of regular visits, scheduled conferences and appointments, or telephone communications. Industrial arts in the elementary school has as its basic origin student-contrived activities stemming from the regular elementary curriculum. Therefore, it is sometimes difficult for the teacher to pre-plan industrial arts activities. Consequently, the consultant needs to be available on short notice. To minimize this necessity for short notice availability, he should stress the pre-planning aspect of the elementary industrial arts program.

3. Availability of materials. Provisions are made for classroom and central storage of materials. However, as stated earlier, elementary industrial arts activities should be student-oriented and should stem from conventional subject matter areas. Therefore, it is not possible to predetermine all materials and supplies that will be needed. Consequently, the consultant should have the authority to purchase small amounts of materials and supplies when an immediate need arises.

4. Tool inventory. Special attention should be given to a system for keeping up with tools. The consultant should assume the responsibility of convincing the teacher that she cannot operate an effective program unless all tools assigned to her classroom are available to the student. If a tool must be taken out of the classroom for some reason such as maintenance, it should be so noted on the tool panel.

5. Industrial arts and elementary education oriented. Whether the consultant has an industrial arts or an elementary education background, he will need to develop a sound philosophy of the place of industrial arts activities in the elementary classroom. The first step in developing this philosophy should be implemented by enrolling in a graduate course entitled "Industrial Arts in the Elementary School" (see Appendices B and C). Additional course work in industrial arts and elementary education should follow.

It is recommended that if the consultant does advanced study, his graduate program should consist of industrial arts and elementary education courses.

6. Promote program. Industrial arts for the elementary school is a relatively new concept in Mississippi. It must be treated as a special program and must be constantly at the forefront of professional attention in the mind of the consultant. He should provide the teachers with whom he is working continuous assistance directed at implementing the merger between industrial arts and elementary education. He must coordinate the program among the various grades to provide consistency and between grade levels to provide continuity. It seems reasonable to expect the consultant to conduct periodic in-service workshops for elementary teachers directed at promoting the merger of industrial arts and elementary education subject matter program. This instruction could be provided during scheduled pre-school in-service workshops, after school hours and/or during conference periods.

The total success of the elementary industrial arts program depends on:

1. The degree to which the consultant successfully functions in the above categories.
2. The degree to which the faculty and administration understands and accepts the purposes and values of the program.

3. The degree to which the administration and faculty are willing to make appropriate activities an integral part of the teaching program.
4. The degree to which parents understand and accept program purposes and values and encourage pupils in their work.

Suggested Activities for Grades 1-6

Since industrial arts activities should grow out of the elementary curriculum, it is not feasible to prescribe specific activities. For a sample listing of activities, refer to Chapter 5 in Elementary School Industrial Arts.[10] This list is presented only to illustrate activities which children and teachers have carried on successfully. Furthermore, these activities should tend to stimulate other ideas, since no such list could be all-inclusive.

The many activities and concepts listed in this reference should be coordinated between the various grade levels. The level of pupil involvement should increase as the child progresses through grades 1-6. For example, in the first grade, the student may be introduced to the name and general use of combination pliers which is a tool commonly found in homes. However, by the time he has completed the 6th grade, his knowledge of these tools should have been

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[10] Op. Cit., Gerbracht, pp. 186-259.

expanded to include the proper name, care and safe use of a variety of pliers.

Furthermore, some basic learning experiences involving tools and materials should be repeated at each grade level. Examples of these are as follows:

1. Planning the activity
2. Making bill of materials
3. Determining proper sequence of procedures to successfully complete the activity
4. Listing tools necessary to successfully complete the activity.

The acquisition of industrial skills and knowledge is not the paramount objective of industrial arts in the elementary school. It should be kept in mind, however, that varying degrees of both skill and knowledge should be acquired, depending upon the aptitudes and interests of individual students and the appropriateness and intensity of the experiences to which they are subjected. The following lists are indicative of the range of skill and knowledge which could be reasonably expected.

Skills the Pupil Should Learn to Perform	What the Pupil Should Know
1. Use try square in making at right angles to straight edge.	1. Name, care and use of tools.
2. Use of C clamp.	2. Difference between hard and soft wood.
3. Sawing across grain.	3. How to perform good housekeeping practices.
4. Ripping.	4. Safety precautions in the use of all tools and equipment.
5. Use of mitre box and back saw.	5. How to select proper size nails.
6. Drilling holes in wood.	6. How to work and share with others.
7. File curved edges.	7. The importance of proper storage of tools when not in use.
8. Driving and pulling nails with claw hammer.	8. Importance of accuracy.
9. Smoothing with sandpaper.	9. Importance and dignity of work.
10. Use of paint brush with water, paint, and shellac.	10. Relationship of classroom activities to the world of work.
11. Application of stain.	11. Basic mathematical and scientific principles involved in construction activities.
12. Use of scale-measuring in even inches.	
13. Sawing with keyhole saw.	
14. Planing edges with block plane.	
15. Using combination pliers.	
16. Use of coping saw.	
17. Use of screw driver and screws.	
18. Use of glue.	
19. Clean paint brushes.	

Tools for Classroom Use

If industrial arts activities are to become an integral part of the elementary curriculum, certain basic hand-tools must be available in each classroom where such activities are attempted. Furthermore, the use of these tools must be a pleasant experience for both teachers and students. Consequently, these tools must be kept in good condition at all times. They should be attractively mounted and displayed so the student will consider them an integral part of the classroom. (See typical industrial arts area in Appendix D.)

The following list of tools and furniture is recommended as a minimum requirement for each classroom (grades 1-4). This will allow for approximately one-fourth of the class to work in the industrial arts area at any one time.

Quantity	Description*	Unit Cost	Total Cost
2	5" C clamps	$ 2.50	$ 5.00
2	10 and 12 oz. wood handle claw hammers	5.60	11.20
1	Wooden or rubber mallet	1.80	1.80
1	10" second cut mill file with handle	1.00	1.00
1	File, Type-Surform, No. 295	2.70	2.70
1	File, Round-Surform, No. 297	2.25	2.25
1	Block plane, Stanley No. 118	6.75	6.75
1	6" side cutting pliers No. 38306	3.50	3.50

*Keyed to Brodhead-Garrett catalogue.

Quantity	Description	Unit Cost	Total Cost
1	5" combination pliers No. L25	$1.60	$ 1.60
1	Steel bench rule, 2', No. 62	5.10	5.10
1	10" backsaw	6.10	6.10
35	Coping saws and extra blades	.85	4.25
1	10-point, 20" crosscut saw	5.20	5.20
1	2½" plastic-handled screw driver	1.55	1.55
1	4" plastic-handled screw driver	1.95	1.95
1	6" Phillips screw driver	.85	.85
1	10" Aviation tin snips	6.00	6.00
1	6" try square	2.70	2.70
1	12" combination square	3.60	3.60
1	Yardstick	NC	NC
1	1/4" portable electric drill	18.00	18.00
1	1/16" to 1/4" high-speed steel drill set	5.60	5.60
1	Speedbor spade type wood bits, set 3/8" to 1"	4.95	4.95
1	6" adjustable wrench	2.15	2.15
	SUBTOTAL		$103.70
1	3/4" x 4' x 5' plywood worktop with 24" support to be constructed locally	8.00	8.00
2	Clamp-on carpenter's vises	3.66	7.32
1	3/4" x 4' x 3' plywood open tool panel to be constructed locally and mounted on wall (see Appendix D). Designed with custom holders to house recommended tool list. (One 4' x 8' sheet of 3/4" plywood will make one worktop and one tool panel.)		
2	4' long (22" high) sawhorses. Legs to be constructed of 1 x 6 pine set at 22 degree angle. (See page 13 of Point of View Elementary Industrial Arts by Stanley Tools, Educational Department, New Britain, Connecticut)	2.00	4.00
			$126.02

Note: Worktop, sawhorses and tool panel should be stained and varnished for uniform appearance.

In recognition of the cost involved in equipping each elementary classroom, the list of recommended tools was held to a minimum. Additional handtools would be helpful in carrying out the objectives set forth in this document. They are listed in order of priority.

Extension cord
Hacksaw
403 drill points
Nail set
Center punch
Counter sink
Sloyd knife
File card
Framing square.

There is also a place for portable power tools in the "industrial arts corner." Ivey states that:

> A number of small power tools suggest to the student some of the realities of industry. A 1/4" drill, sabre saw, finishing sander, and a jig saw are appropriate for elementary classes.[11]

If a departmentalized industrial arts classroom laboratory is used in grades 5-6, additional tools, equipment and floor space will be required and should be provided for in accordance with need. (See pp. 74-87 of Elementary School Industrial Arts[12] for suggested equipment list and floor plan.)

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[11] Op. Cit., Ivey, p. 108.

[12] Op. Cit., Gerbracht, pp. 74-87.

Materials for Classroom Use

Handwork requires a variety of construction materials. It would be difficult to list all possible materials that could be utilized in the elementary classroom. One of the objectives of this project is for children to solve problems they encounter. Therefore, the ingenuity of student and teacher are the only limitations to possible material selection.

The following list is suggestive of locally-available materials which can be obtained at a nominal cost.

It is suggested that all materials preceeded by an asterick (*) be housed in the classroom and the remainder be kept in central storage.

Hardware

Hinges, loosepin, various sizes

Screw eyes, various sizes

Cup hooks, various sizes

Square benthooks, various sizes

Corner braces

Tape - friction, plastic electricians, masking

Contact cement

Rubber cement

Bolts - machine and stone with nuts

Washers, assorted

*Finishing nails - assortment

*Common nails - assortment

*Wire nails - assortment

*Brads - assortment

*Screws - flathead and roundhead - assortment

*Scotch fastener

*White casein glue (all purpose)

Lumber

No. 2 common pine 1 x 2, 1 x 4

Mahogany, sugar pine, fir or other softwood

Masonite or hardboard - 1/8" x 4' x 8'

Pegboard - 1/8" x 4' x 8'

Upson Board - 1/4" x 4'‘x 8'

Dowel rods - assorted 3' lengths (1/16" - 1")

Interior plywood - 1/4" x 4' x 8'; 1/2" x 4' x 8'

Finishing Supplies

Latex paint

Paint thinner

Paint brushes (one inch)

Artist brushes

Garnet sandpaper - medium and fine

Steel wool

Deft, natural finish

Lacquer thinner

Mahogany stain

Material Storage

Material storage space for grades 1-6 should be available separate and apart from the industrial arts laboratory which will serve grades 7-8. This space should be available for teachers for experimentation and for use by classes involved in programs which cannot be carried out in the classroom. If a departmentalized approach to teaching industrial arts in grades 5 and 6 is followed, the associated classroom-laboratory may well take care of these space needs. If this is not possible, central material storage should be provided in the industrial arts laboratory.

When elementary students become engaged in activities involving materials housed in central storage, the teacher should encourage them to develop a bill of materials. The consultant, not the industrial arts teacher, should be responsible for the procurement of these materials. This will minimize disruption of activities in the industrial arts laboratory.

Implementation of Pilot Proposal

To successfully implement the elementary industrial arts program in the Greenwood City Schools, it is recommended that a pilot program involving only one or two schools would logically be the first step.

The following statements are offered as support for this recommendation:

1. This approach would provide an opportunity to make necessary modifications in the program before it is initiated on a system-wide basis.
2. Because of the large number of elementary teachers involved, it would be difficult to initiate a program of this magnitude by the beginning of the 1970-1971 school year.
3. Basic hand tools need to be available in each classroom (grades 1-4) and in each classroom-laboratory (grades 5-6) to implement the elementary industrial arts program. Due to the sizable expenditure of funds required to equip all classrooms in the system, careful consideration must be given to the number, size and type of tools which are to be used. A pilot program is necessary to determine the most economical expenditure of funds for tools.
4. A pilot program will also provide an opportunity to build a nucleus of enthusiastic teachers who will be beneficial in the system-wide implementation of the program. These teachers can provide valuable assistance in further program expansion.

The initial responsibility of the elementary industrial arts consultant should be concerned with the development of the pilot program. He should provide assistance in integrating industrial arts activities into the existing elementary curriculum.

Teacher Education. It is proposed that a teacher education program be initiated. This program will provide elementary teachers with the necessary background for utilizing industrial arts activities in their classrooms.

To give the elementary teacher a comprehensive understanding of elementary industrial arts content and method, an extension course should be offered. This industrial arts course would probably be taught once a week for 15 weeks. It would carry three hours graduate credit and would be taught in Greenwood (see Appendices A and B for course description). This course, taught by university personnel, should be implemented at the earliest possible time.

It is believed that this course would contribute to the implementation of the objectives of elementary industrial arts as set forth in the course outline (see Appendix B). This graduate course will also be available through the Mississippi State University summer school program.

Program Expansion

Industrial arts activities should eventually permeate the curricula of all elementary schools in the Greenwood School System. This expansion would be feasible from the standpoint of Mississippi State University staff participation if it took place at the rate of two schools per year. This would allow sufficient time for each elementary

teacher to take the elementary industrial arts course before being asked to introduce industrial arts activities into the elementary curriculum. This time schedule would also allow for the purchase of tools, the building of needed furniture, and the maximum efficiency of the elementary industrial arts consultant's efforts.

Technology for Children

While conducting a similar study for the Leflore County Public School System, the authors asked Dr. Elizabeth Hunt to assist with the elementary industrial arts portion of the study. Dr. Hunt has gained national recognition as one of the leading authorities on industrial arts in the elementary school (Technology for Children). That part of her report which applies to this study is reproduced in Appendix E.

Elementary Industrial Arts in Leflore County, Mississippi

Industrial arts is being introduced to all elementary children (grades 1-6) in the Leflore County, Mississippi Schools.

Mrs. Kathryn Thompkin is an elementary teacher in one of those schools. She was enrolled in the Elementary Industrial Arts graduate course referred to earlier and has since integrated industrial arts into her teaching. She

was asked to explain her program at the Ninth Annual Mississippi Industrial Arts Clinic held at Mississippi State University on February 26-29, 1970. Her enthusiasm is reflected in the paper she presented which may be found in Appendix F.

Grades 7 and 8

One of the prime functions of the last two years of the middle school (grades 7 and 8) is to provide students with educational experiences which are exploratory in nature. This exploratory purpose is often overlooked because its importance is not understood by those responsible for curriculum development. Too often the 7th and 8th grade program is a scale model of the high school curriculum. Teachers and administrators have not addressed themselves to the development of a unique offering for this important educational period.

If industrial arts is to satisfy educational needs at this level, it must provide an opportunity for all students to explore the industrial world of work. "The junior high school industrial arts program (7th and 8th grades) is the most diversified of all (industrial arts programs) and offers a variety of experiences in organized laboratories."[13] Experiences provided through these laboratories should lead

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[13] A Guide to Improving Instruction in Industrial Arts, AVA, 1968, p. 12.

to a richer understanding of the tools, materials, processes, products, and problems of industry. These experiences should be oriented toward providing broad exposure to the many facets of today's industrial world of work.

> The program includes opportunity for . . . planning, experimenting, and working in the major activities of industrial arts. Opportunities to study the underlying functions of industry and to explore their inter-relationship are all part of the total program.[14]

The traditional "project-centered" industrial arts approach no longer depicts or relates effectively to modern industry. This approach is based on the concept of industry as it existed in the late 1800's and early 1900's. Industrial arts cannot accomplish its important pre-vocational and exploratory functions if it does not adequately convey the modern concept of industry.

The following objectives should be used as guidelines for developing industrial arts programs for the 7th and 8th grades in the Greenwood City Schools.

1. Provide all students with the opportunity to explore the industrial world of work.
2. Provide opportunities for attaining knowledge of industrial vocations and related avocational pursuits.
3. Improve the competence level of the students in

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[14] Ibid., p. 13

regard to choosing, buying, and using the goods and services of industry.[15]

General Purposes for Industrial Arts in the 7th and 8th Grades

Exploring the Industrial World of Work Through the Multi-field Laboratory. The multifield laboratory should provide a wide variety of experiences which will introduce students to industry located in the service area of the school system (see Flow Charts # 3 and # 4). Due to the mobility of the population, this service area should assume a national posture.

Exploratory experiences provided through the multi-field laboratory should be strongly supported with supplemental information concerning professional and occupational opportunity in each of the areas studied. Industrial arts teachers should strive to provide programs which will present a desirable balance between supplementary knowledge and practical application (laboratory experiences).

Exploring the Industrial World of Work Through Occupational Orientation. Occupational orientation should be an integral part of the 7th and 8th grade industrial arts program. This segment of the total program should provide exploratory experiences in the total work spectrum which will enable students to make wiser and more satisfactory occupational

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[15] Ibid.

7th Grade Industrial Arts and personal and Social Adjustment

Class Rolls	5	15 Days	15 Days	15 Days	15 Days	65 Days	30 Days	20 Days
Travis Abney Hugh Adams John Aldridge John Ball Wayne Barnard Douglas Bell	Orientation	Ceramics	Plastics	Non-Ferrous Metals	Graphic Arts	Personal and Social Adjustment (To be taught by the Home Economics Teacher)	Occupational Orientation The use of the SRA Occupational Exploration Kit is recommended To be team taught by the Home Economics and Industrial Arts Teachers OR A unit on "Interpretation of Modern Industry" in the form of a Classroom Industry for Boys and continuation in Personal and Social Adjustment for Girls	This 20 days to be allocated to holidays and other periods which are deleted from teaching time.
Charles Bond Rex Brunt Robert Campbell William Carter Larry Cooper Billy Couch		Plastics	Non-Ferrous Metals	Graphic Arts	Ceramics			
		(To be taught by the Ind. Arts teacher)						
Clinton Davis Louis Edison Thomas Floyd Clyde Guyse Aubrey Hathcock David Hickle		Non-Ferrous Metals	Graphic Arts	Ceramics	Plastics			
Braxton Holden William Jones Lloyd Johnston Paul Kinard William Lester Richard Mattox		Graphic Arts	Ceramics	Plastics	Non-Ferrous Metals			
Ann Adams Julia Box Beva Burdine Janis Cavender Eunice Chapman Linda Delmore Dorothy Ellis Eva Fulton Paula Fulton Sherry Gammell Ruth Glover Judit Hemphill Beth Henson Lynda Henson Diane Hood Pam Howell Martha Jones Eva Kellum Clara Logan Louise Martin Ann McDowell Ruth Melton Ida Metts Betty Morgan	Personal and Social Adjustment (To be taught by the Home Economics Teacher)	Orientation	Ceramics	Plastics	Non-Ferrous Metals	Graphic Arts		
			Plastics	Non-Ferrous Metals	Graphic Arts	Ceramics		
			(To be taught by Ind. Arts Teacher)					
			Non-Ferrous Metals	Graphic Arts	Ceramics	Plastics		
			Graphic Arts	Ceramics	Plastics	Non-Ferrous Metals		

FLOW CHART # 3

8th Grade Industrial Arts (Multifield Laboratory)

Class Roll	10 Days	30 Days	30 Days	30 Days	30 Days	5 Days	30 Days	15 Days
John Doe Jim Smith Jack Jones Harry Simms Joe Doak Jill Davis	Orientation	WOOD	METAL	ELECTRICITY	POWER	Ending Industrial Arts - Introduction to Occupational Orientation.	Occupational Orientation The continued use of the SRA Occupational Exploration Kit is recommended (To be taught by the Industrial Arts Teacher) OR A modified unit on "Interpretation of Modern Industry" in the form of a Classroom Industry	This 15 days to be allocated to holidays and other periods deleted from teaching time.
Sarah Massey Barbara Hare Lynda Camp Fred Fisher Donald Laster Charles Henderson		METAL	ELECTRICITY	POWER	WOOD			
Billy Bunch Dennis Raye Dorris Russell Mildred Fair Evelyn McMinn Jerry Campbell		ELECTRICITY	POWER	WOOD	METAL			
Robert Mays Thomas Jackson Sarah Cain Gloria Robbins Elizabeth Byron Joan Newton		POWER	WOOD	METAL	ELECTRICITY			

FLOW C HART # 4

choices. A thirty-day block of time could be devoted to this pursuit in the 7th grade (see Flow Chart # 3, page 49). Additional time may be devoted to occupational orientation at the 8th grade level.

These occupational orientation experiences would be under the direction of the industrial arts teacher. It would be his responsibility to organize and coordinate all activities. A major responsibility would be to obtain resource persons from the school, community, county or state who could adequately present the requirements and advantages of the occupational areas selected for study.

Exploring the Industrial World of Work Through a Classroom Industry. Industrial arts can make one of its strongest educational contributions by providing the youth of America with an insight into the industrial society in which they must live. The exploration of the interrelationships of the various facets of industry should be accomplished through the organization and operation of a "classroom industry." The primary purposes of this activity would be the development of a workable and meaningful knowledge of industry through actual involvement in its problems. (See Appendix G which corresponds with Chapter V of NDEA Report, Interpretation of Modern Industry.)

It is strongly recommended that thirty school days be devoted to "occupational orientation" in the 7th and 8th grades as shown in Flow Charts # 3 and # 4. In the event

that it is administratively determined that "occupational orientation" will not be included in either or both of these grades an equal amount of time should be assigned for the teaching of a modified unit on the "interpretation of modern industry." This unit of instruction could take the form of the "classroom industry" briefly described above.

In either event, the first semester of the 9th grade should be devoted to the teaching of a full-fledged unit on the "interpretation of modern industry" and the second semester to "occupational orientation" as shown on Flow Chart # 5, page 53.

The 7th Grade

The informal industrial arts experiences of pupils in grades 1 through 6 should have prepared them for the more formal experiences of this nature in the 7th grade. They should possess the degree of readiness necessary to profit fully from the exploratory experiences representing the world of work which are introduced at this point in the curriculum structure. This pupil group should also have matured to a sufficient degree to profit from instruction in "personal and social adjustment" which is paired with industrial arts at this level. The compatibility of these subject matter areas stems from the assumption that success in the world of work is dependent upon satisfactory adjustment to the environment on and off the job. The fact that

9th Grade Industrial Arts

Class Roll	10 Days	80 Days	10 Days	80 Days
John Doe James Fox Box Jones . . . 24 Students . . . Larry Russell Lawrence Smith Tom Tubbs	Orientation	Interpretation of Modern Industry	Orientation including the introduction of the technique to be used. (The Roe Schema is recommended.)	(<u>Occupational Orientation</u>) <u>Roe's Schema</u> Supplemented by the <u>SRA Occupational Exploration Kit</u> The prime objective should be to provide opportunity for pupils to crystalize their occupational interests to the point of "career consideration" of selected occupational areas. The most desirable result of this study would be a career decision and an educational plan. It may be necessary to pursue occupational orientation into the 10th grade to accomplish this result. (To be taught by the Industrial Arts Teacher) OR A (<u>General Lab Course</u>) in a selected area such as <u>Electricity and Electronics</u>. Note: If this option is taken, the semesters should be reversed.

FLOW CHART # 5

one full semester is devoted to intensive instruction in personal and social adjustment does not eliminate the necessity for continuous instruction of this nature throughout the remainder of the pupils' time in school. Additional emphasis will be given to this area in the high school with special emphasis in part-time cooperative education programs in the 11th and 12th grades.

The 7th grade subject matter organization is schematically shown in Flow Chart # 3, page 49. The reader will observe that two student groups are involved with a total of 48 pupils (boys and girls). These classes could be separated according to sex. It is recommended, however, that approximately equal numbers of boys and girls be included in the two class groups but that they be mixed rather than segregated.

Upon examination of Flow Chart # 3, the reader will notice that one class group will move into the industrial arts laboratory for instruction under a qualified industrial arts teacher. The other class will begin to receive instruction in "personal and social adjustment" under a qualified home economics teacher in a home economics laboratory or classroom. The industrial arts group will spend the first five days in an orientation period. This period of instruction is designed to prepare the group for successful participation in the industrial arts laboratory experiences that are to follow and to acquaint them with the personal

conduct which will be expected. Following this period the group will devote 15 school days in each of the areas of ceramics, plastics, nonferrous metals, and graphic arts. (Other areas may be selected if found to be more appropriate.) At the end of 65 school days, the two groups will rotate as indicated by the flow chart.

At the end of another 65 school days both groups will come into a 30-school day period of "occupational orientation." At this point both classes will have had the same educational experiences and should be equally ready for the new experiences included in this area.

It should be noted that "occupational orientation" is optional depending on administrative decision. The alternatives are a modified unit on "interpretation of modern industry" for boys under the direction of the industrial arts teacher, and an advanced unit of "personal and social adjustment" for girls taught by the home economics teacher.

The initiation of occupational orientation at the 7th grade level is highly desirable from the standpoint of the necessity of alerting the pupil to his potential in the world of work at a time early enough to permit intelligent educational and career planning. It should be kept in mind that the occupational orientation experiences will be intensified in the 8th and 9th grades for the purpose of making the consummation of educational and career plans possible before entering the 10th grade. It stands to

reason that this objective will not be accomplished by all pupils. For this reason occupational orientation should be available above the 9th grade. In the final analysis, the best interests of all pupils will have been served by their having been subjected to the experience described above at this point in their educational program.

It is further suggested that occupational orientation is extremely compatible with industrial arts because it relates closely to one of its basic objectives. In addition to this, the industrial arts teacher is probably the most occupationally versatile of all teachers. He is a student of occupations rather than an occupational specialist. Characteristics of this kind make it possible for him to lead occupationally-innocent pupils into unbiased study and exploration of the world of work.

The 8th Grade

The 8th grade industrial arts program should be composed of three interrelated segments. These segments are: (1) orientation to the program, (2) multifield laboratory experiences, and (3) occupational orientation or interpretation of industry through the organization of a "classroom industry."

Orientation. Orientation is of vital importance in the development of proper student attitudes. Teachers must not treat this as an unimportant activity but must seize this

opportunity to provide students with an insight into the industrial arts program.

Orientation can be facilitated by helping students develop an understanding of the role industrial arts plays in the interpretation of industry. The industrial arts program can be made more meaningful if students understand the importance of knowing the impact that industry has on American society. When students understand these two facts, the industrial arts program should become relevant to their needs. Once education is approached from the standpoint of need satisfaction, students will become fascinated by learning experiences.

The prime purpose of this ten-day orientation period (see Flow Chart # 4, page 50) should be to prepare the group to participate successfully in the laboratory experiences which are planned for them and to reiterate policies concerning conduct which will be required. In addition to this, a portion of each period should be devoted to instruction in the basic elements of mechanical drawing.

It is strongly suggested that the following items be considered in the development of the orientation program:

1. The nature of industrial arts and its relationship to modern industry.
2. Personal conduct expected.
3. Class routine.
4. Shop tour.

5. Instruction sheets.
6. Charts and their use.
7. Project selection.
8. Laboratory rules including safety.
9. How grade will be determined.
10. How laboratory work will begin.
11. Test.

Note: Approximately one-half of each period should be devoted to mechanical drawing.

Multifield Laboratory. Work in the multifield laboratory will parallel and expand the exploration of industry conducted in the 7th grade program. This part of the total program will be conducted for 120 days. It should consist of (1) laboratory experiences, (2) related technical information, and (3) information which will unite the laboratory experiences and related technical information to the world of work.

Laboratory experiences should be clustered around industrial areas which are representative of the school's service area. It should be remembered that the mobility of the population often makes the service area much broader than the local school district.

Flow Chart # 4, page 50 suggests that wood, metal, electronics and power be used as the areas to be explored. These are excellent areas to study but must not be considered finite. Other areas may be more representative of

a particular school's service area.

Laboratory involvement is important but should not overshadow the large amount of related information which supports a technical field. Manipulative activity without sufficient theoretical background does not provide students with a complete understanding of the industry or industrial process being presented in the learning environment. Teachers must develop a realistic balance of time between laboratory experience and related technical information.

Much has been written about making learning experiences meaningful. This desirable educational goal can be partially fulfilled by relating educational experiences to the real world that students must live and compete in. The industrial arts teacher must help students develop a full and meaningful understanding of how the laboratory activities and technical information unite to become an effective and efficient tool of the industrial world of work.

Interpretation of Industry. Specialization, mechanization, and technological growth have combined to make industry an abstract entity. Most present-day youth have no real concept of what goes on behind the barriers that shroud the industrial world of work. Much of this abstraction can be removed by involving students in the organization and operation of a "classroom industry." This activity will allow students to become involved with the processes and problems of industry.

The extent of involvement in a "classroom industry" is dependent upon (1) the amount of time available for the activity, (2) the maturity level of the students, (3) the equipment available and (4) the materials available.

Flow Chart # 4 suggests that a 30-day block of time is available for the operation of a "classroom industry" as an alternate for occupational orientation. This is not sufficient time to organize a company, develop a product, produce the product, and sell the product. Therefore, if this period of time is to be effectively used, it is suggested that one of the following options be employed:

1. Organize a company to produce a product that has been developed by the teacher.
2. Organize a production unit and exclude the other functions involved in an industry.

Steps for Option # 1.

1. Teacher would select a product that could be produced by the students.
2. Teacher would develop all jigs and fixtures needed to produce the product.
3. Teacher would assist the class in organizing a company to produce and market the product. (See Figure 1 for suggested organization.)
4. Students would produce and market the product.

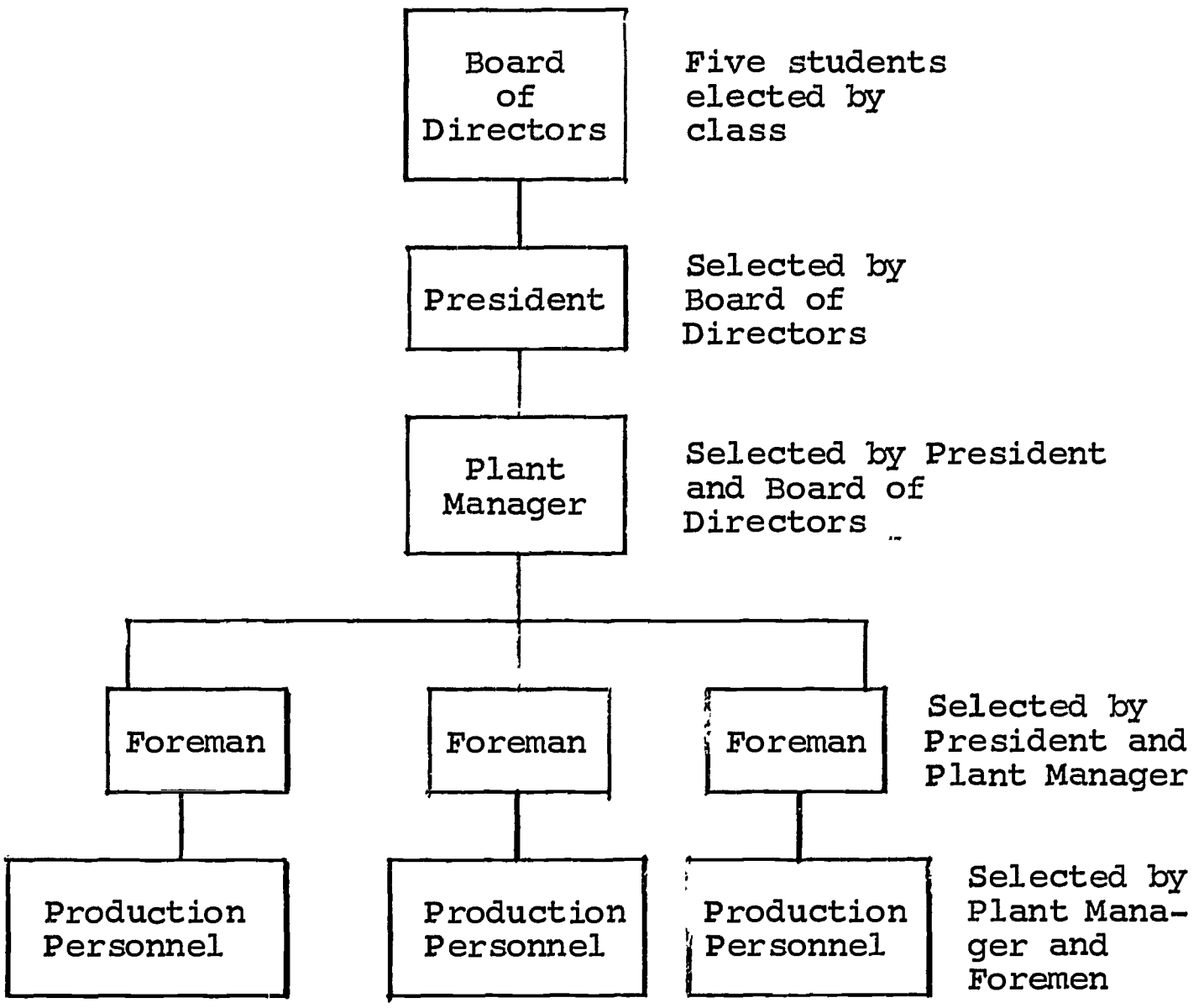


FIGURE 1. Line Organization

Steps for Option # 2.

1. Teacher would select an item that could be fabricated by the students. An example would be a fishing lure. The parts could be purchased and then assembled by the students.
2. Students could develop jigs and fixtures to aid in the assembly of the product.
3. Teacher would assist the class in organizing a

production unit (see Figure 2 for suggested organization).

4. Students would market the product.

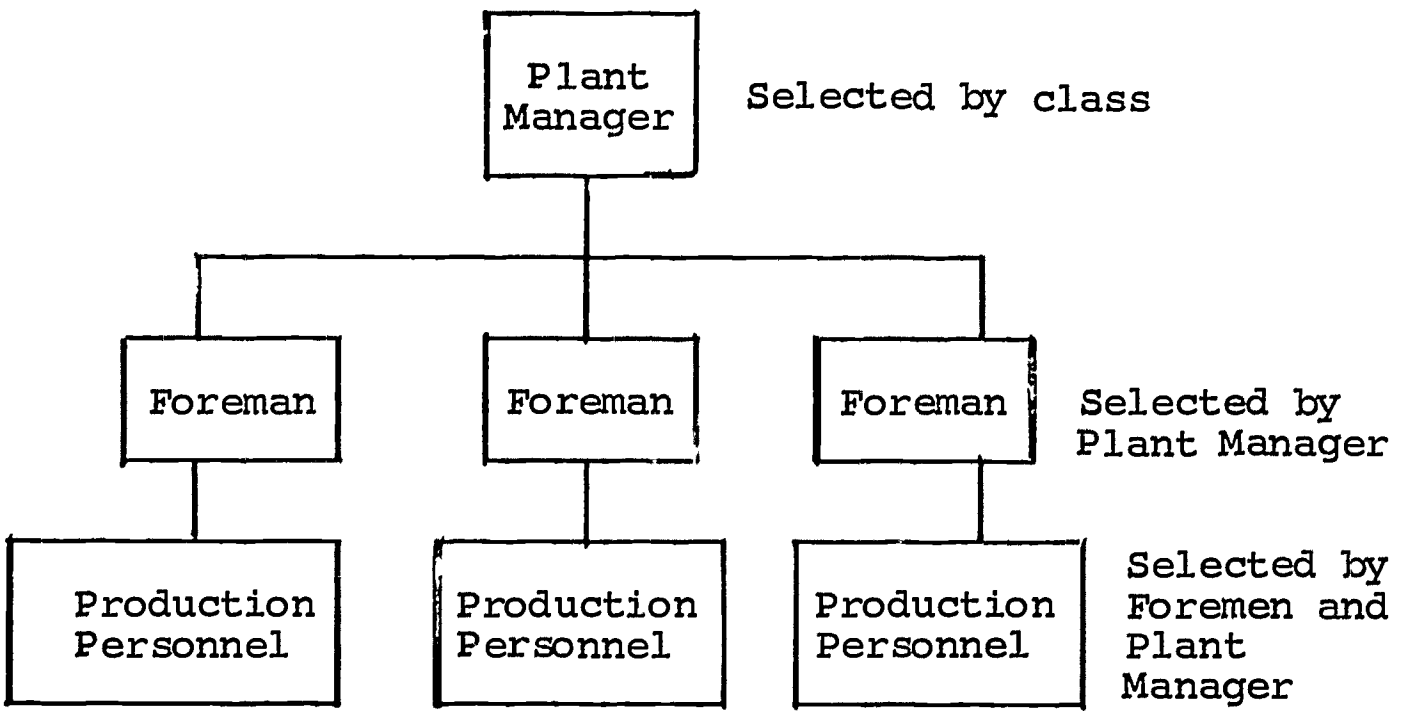


FIGURE 2. Production Unit

CHAPTER III

INDUSTRIAL ARTS AND VOCATIONAL EDUCATION IN THE GREENWOOD CITY SCHOOLS (Grades 9-12)

Philosophy and Purpose

The traditional concept of vocational education and the resulting emphasis which has been placed on it is described by the following excerpts from the Annual Report of the National Advisory Council on Vocational Education to the Secretary of Health, Education and Welfare:

> At the very heart of our problem is the national attitude that says vocational education is designed for somebody else's children.
>
> We have promoted the idea that the only good education is an education capped by four years of college.
>
> It affects students who make inappropriate choices because they are victims of the national yearning for educational prestige.

The above statements probably adequately describe the environment in which vocational education has functioned in the Greenwood City Schools. As expressed earlier, however, these traditional concepts with attending attitudes are presently being subjected to critical scrutiny in an effort to develop an educational program which will more effectively meet the contemporary needs of the total school population.

It is the purpose of this study to design a program of Industrial Arts and Vocational Education for the Greenwood

City Schools which will contribute heavily to the development of new concepts and positive attitudes on the part of all concerned. This program, when effectively merged with the total educational program, will provide appropriate opportunity for all pupils to prepare themselves for the next step they will take after leaving the public schools.

If such a program is to satisfy the above purpose, it must be of sufficient quality to merit the position in the curriculum structure which is being advocated, and it must enjoy prestige equivalent to that accorded other areas of the curriculum.

If the program is to be consistent and progressive, the high school must provide opportunity for all pupils to pursue and satisfy career interests which may have been discovered and/or inspired through exploratory and occupational orientation experiences in grades one through nine. This will mean preparation for the world of work through appropriate programs of vocational education for a major segment of the student population.

Success for vocational education in the high school cannot be expected until the administrative staff, faculty, students and parents accept the concept that the purpose of vocational education is to prepare individuals for successful entrance and progress in a chosen occupation. If this purpose is to be accomplished, certain definite principles must constitute the framework upon which vocational programs

are established and developed. The most important of these principles follow:

1. All vocational programs should be established on the basis of need which can be identified in terms of employment opportunity for program graduates. Vocational education loses its meaning, value and justification if employment opportunity is not available and within reach of those who complete the training.
2. Vocational education can successfully be given only to those who want, need, and are capable of profiting from the instruction. It necessarily follows that high school students should be enrolled in vocational programs only after having been intensively subjected to accepted vocational guidance procedures which will have determined that individual students have:
   a. Appropriate aptitutes, vocational interests and personal and physical characteristics which will make success possible and probable in the occupational area under consideration.
   b. Vocational intent and a desire to satisfy the attending need to be qualified for employment.

Vocational education conducted without regard for this principle constitutes an educational burlesque and should not be tolerated. Administrators would do well to carefully examine and adjust enrollment policies in all vocational

education programs in accordance with this principle.

3. Vocational education will be successful in proportion to the degree that the environment in which the student is trained is a replica of the environment in which he will subsequently work. This refers to the type of facilities and equipment, nature of the instruction and the organization and management of the instruction. In other words, every facet of vocational instruction should involve activities which are as near the real thing as possible. Equipment should be of the production type which is used in industry as opposed to "home craft" varieties. Laboratory activities should involve real products which compare favorably with products being produced in modern industry. For example, building trades classes should be constructing modern houses which could be sold or rented after completion, rather than building cedar chests in the school shop.
4. Vocational education will be effective in proportion to the occupational competency of the teacher in the field in which he is teaching. There is no substitute for successful work experience on the part of the teacher. His teaching must stem from his ability to perform acceptably under actual job circumstances in the occupational area in which he is teaching.

5. There is a minimum per capita cost below which effective vocational education cannot be given. If there is not sufficient fiscal ability to meet this minimum cost, vocational classes in question should not be attempted. The implication here is that vocational education is more expensive than general education and should not be judged by the same criteria. Administrators should recognize and apply this principle in determining which vocational programs are fiscally feasible in their school.

6. All vocational education programs should function under the counsel and advice of a representative general advisory committee. Such a committee will constitute the kind of liaison the school must have with its service area in order to be fully aware of its needs and how well they are being met. In addition to the general advisory committee, the program should be served by as many craft or occupational committees as are necessary to insure proper standards in course content, equipment, and facilities in all occupational areas. It should be emphasized at this point that general advisory and craft committees have no administrative responsibility or authority. Their purpose is to serve in an advisory capacity only. The school will find such groups to

be of great help if they are properly selected, organized and utilized.

7. The guidance and counseling system should begin in the elementary school and should increase in intensity at each grade level extending through the high school. The success of the Greenwood City School program will depend heavily upon the development of a guidance and counseling system which will:
   a. Initiate guidance functions in the elementary school coupled with world of work exploratory experiences beginning as early as grade one.
   b. Establish a policy which would eventually provide a full-time counselor for every 250 pupils in the high school.
   c. Establish a policy requiring that each high school pupil have an individualized program of study.
   d. Eliminate the classification of students according to traditional programs or tracks such as "college preparatory," "vocational," or "business."
   e. Provide formal occupational orientation experiences at a time early enough in the pupil's educational program to make the consummation of career and educational plans possible before entering the 10th grade.

All aspects of the program which is described on the following pages of this report are based upon the above principles.

Grade 9

Pupils reaching the 9th grade will have been subjected to experiences in grades one through six which were designed to introduce them to the world of work. The 7th and 8th grades provided more intensive exploration of the world of work, together with formal occupational orientation experiences. The 9th grade continues the pattern with increased emphasis on orientation to the world of work and the opportunity to compare personal aptitudes and vocational interests with occupational requirements at all levels of employment.

The first semester of the 9th grade is assigned to the "interpretation of modern industry." This is a course of study designed to help the pupil to crystallize his understanding of modern industry, its methods, materials and processes, and its place in our culture (see Appendix G).

The second semester is devoted to "occupational orientation," with the prime purpose of providing an environment which is extremely conducive to serious consideration of career objectives. Every possible effort should be made to bring pupils to this point of decision before they enter the 10th grade. If this can be accomplished, meaningful

educational programs can be planned. Those pupils who are unsuccessful in establishing vocational goals by this time should be encouraged to continue their search through participation in vocational guidance activities and other informal occupational orientation opportunities provided by the school.

The subject matter organization for grade 9 is schematically shown in Flow Chart # 5, page 53. It will be noted that a class of 24 pupils will move into a ten-day orientation period at the beginning of the school year. This time will be devoted to essential preliminaries involving the entire class. A program of instruction should be planned which will fully prepare the class for successful participation in the experiences to follow. The class will then advance into a period of 80 school days devoted to the establishment and operation of a simulated industry which will involve:

1. The incorporation process
2. The organization of industry
3. Financing
4. Product selection and design
5. Production
6. Sales
7. Liquidation of the corporation.

Successful participation in this program will result in each individual having a better understanding and

appreciation of the methods, materials and processes of modern industry and its contemporary values to humanity. This experience should contribute heavily to the individual's ability to identify and judge his inate aptitudes and vocational interests as they apply to the occupational opportunities which are presented by modern industry.

Following the 80-school day period described above, the class will move into another 10-day orientation period as indicated on Flow Chart # 5. From this point the pupil group will enter an 80-school day period of occupational orientation experiences. It is recommended that this instructional program be designed to utilize materials which are available through the Curriculum Coordination Unit (CCU) which is operated under the auspices of the State Department of Vocational Education at Mississippi State University. Such materials are currently based on Roe's Schema. If the SRA Occupational Exploration plan were used in the 7th and 8th grades, it may be advisable to continue its use in the 9th grade as a supplement to Roe's Schema. If it were not used in the 7th and 8th grades, it might well be adopted as the sole avenue of approach to occupational study in the 9th grade as opposed to the use of Roe's Schema. There are other plans of occupational study which might prove to be more desirable than either of the above.

It will be recalled that occupational orientation is optional in the 7th and 8th grades. Here again, although

strongly recommended, its inclusion in the 9th grade program rests upon administrative decision. If it is not a part of the program in the lower grades, its inclusion at this point becomes mandatory if formal occupational orientation experiences are essential prerequisites to the intelligent planning of individual high school programs in terms of occupational purpose. If occupational orientation is included in the 7th and/or 8th grades, the 9th grade plan simply continues the program with more time and greater emphasis.

It is strongly recommended that occupational orientation be included in the 7th, 8th and 9th grades. It is believed that this represents as much time and credit as can be justified for this activity and that it is properly located in the curriculum structure to bring the best results.

If it is administratively determined that occupational orientation is not to be included in the 9th grade, the semester in question should be devoted to industrial arts. The most appropriate form of industrial arts for this level in the curriculum would be a general laboratory in a selected area such as electricity and electronics. Such experiences would have great value for 9th graders but would scarcely satisfy the intense need pupils of this age have for assurance that there is a place for them in the world of work and that they will have an opportunity to

prepare themselves for it. Additional industrial arts courses will be available at a later time in the secondary program for those who have room for them in their individualized programs of study.

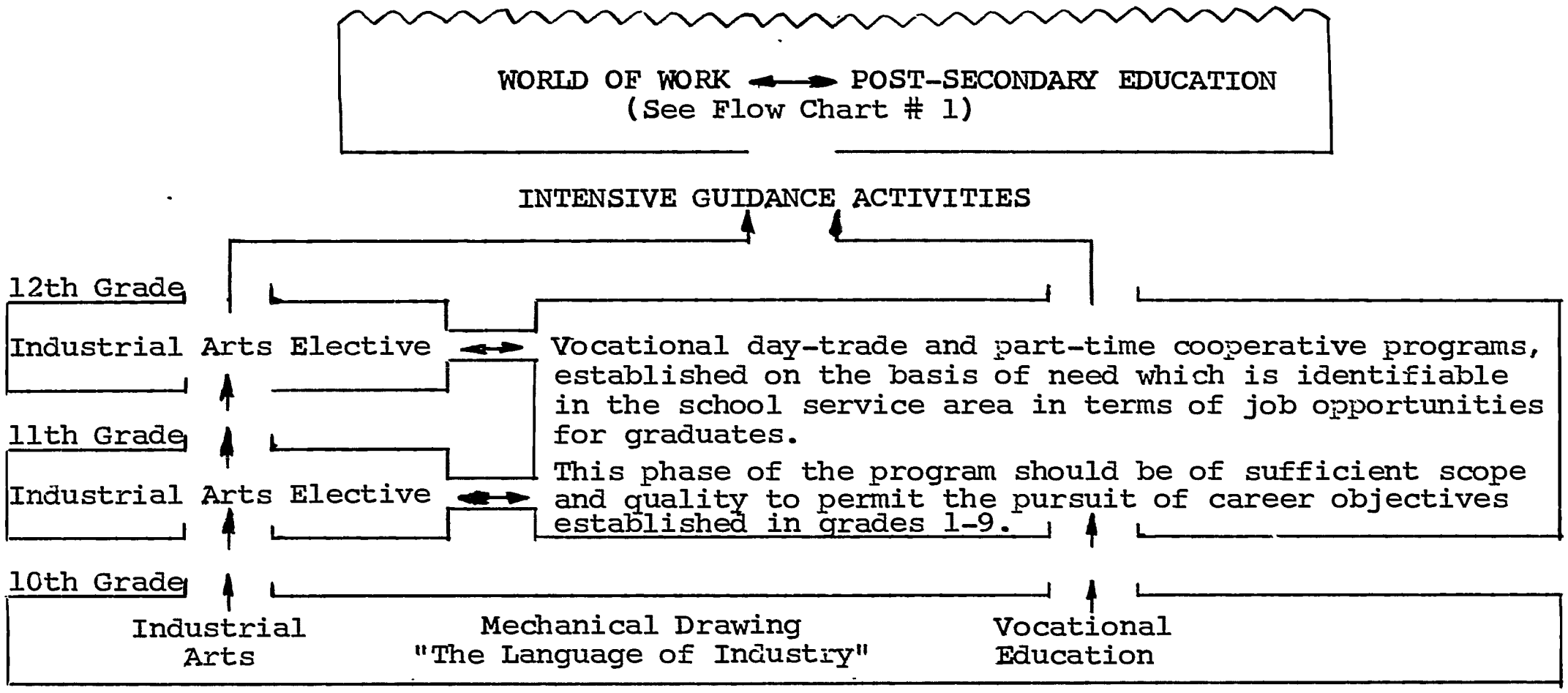
The 7th, 8th and 9th grades probably mark the greatest drop-out points in the public school program. This lends prestige to the special attention that this study has given to the program in these grades. It is suggested that successful application of the program for grades one through nine as recommended in this report will contribute greatly to the alleviation of the drop-out problem.

Grade 10

Mechanical drawing is universally defined as "the language of industry." This places a value upon it which cannot be overlooked in vocational and industrial arts programs and justifies its being included as an integral part of the total program.

The basic elements of mechanical drawing should be taught incidentally throughout the middle school industrial arts program with specific emphasis being given to this area in the 10th grade (see Flow Chart # 6, page 74). This emphasis should take the form of a full-unit course to be required of all students who will enter specific vocational programs in the 11th grade. The course should be an available elective to all students in the 10th, 11th, and 12th

INDUSTRIAL ARTS AND VOCATIONAL EDUCATION IN GRADES 10-12



FLOW CHART # 6

grades who are not interested in vocational education but attach value to the course for other reasons. In this respect it is suggested that separate sections be provided for each of these interest groups.

Students having interests which cannot be satisfied by the vocational courses which are offered in the high school may elect to continue in industrial arts courses on the high school level. It is, therefore, recommended that advanced industrial arts courses be made available at the 10th, 11th, and 12th grade levels (see Flow Chart # 6, page 74).

It is assumed that students who are interested in specific vocational training will have made their occupational choice before or at the time they reach the 10th grade level. At this point they would schedule mechanical drawing as a preliminary to enrollment in the appropriate vocational program in the 11th grade.

Grades 11-12

Specific vocational day trade programs are normally designed to operate for two 9-month school terms involving three clock hours of instruction per day, 15 hours per week and 540 hours per term. The total instructional time during the two year period is 1,080 hours. As a general rule the students receives two credits for each year or a total of four credits. During this two year period the

student will also take two regular high school courses each year thus earning the usual four credits per year which will satisfy graduation requirements. It is strongly recommended that vocational day trade programs presently being offered in the Greenwood High School be examined for the purpose of determining if they are in line with the needs of students and are representative of occupational areas which offer employment opportunities to graduate from the program (see Flow Chart # 6).

It is understood that a full-fledged occupational study of areas served by the Greenwood Schools is being made in an effort to identify areas of employment opportunity for high school graduates for an extended period of years. Information which results from this study should serve as an excellent basis for determining which specific vocational education programs should be continued and/or established.

Vocational Part-time Cooperative Education

It is suggested that vocational part-time cooperative training be made an integral part of the total vocational and industrial arts program of the Greenwood Schools. Such a program would provide an excellent opportunity for selected students to receive a superior type of educational experience "in the classroom and on the job," as a preliminary to full-time employment after graduation from high

school (see Flow Chart # 6, page 74). If vocational part-time cooperative education is to be included as an integral part of the total program, it should be established in accord with guidelines which have been developed by the State Department of Vocational Education.

A paramount feature of the program would be departure from traditional requirements for part-time cooperative education classes which restrict student enrollment to specified occupational areas. Such departure is in line with principles involved in the vocational act of 1963 and the amendments of 1968 which seek to eliminate segmentation of vocational education services according to occupational lines and to encourage the principle of "occupational mixing."

Students to be enrolled should be carefully screened according to their possession of appropriate aptitudes and vocational interest, and their attitude and sincerity of purpose toward preparation for full-time employment.

It is recommended that the program be confined to the 11th and 12th grades and that students be permitted to enroll in all of the legitimate occupational areas which are represented in the Greenwood area. Final decisions on the part of students to enroll in the part-time cooperative program should be based on the results of full participation in vocational guidance opportunities which have been available to them. This does not eliminate the

advisability of establishing specialized part-time cooperative education programs in specific occupational areas where sufficient need and justification exists. For the most part, however, the part-time cooperative program should be used to provide the occupational breadth which is needed to satisfy the occupational interests of the high school students enrolled in the 11th and 12th grades.

Day school vocational programs should be established in accord with the findings of the occupational study previously discussed.

Vocational Guidance

Vocational guidance is a continuous process and must be vigorously applied throughout the elementary and secondary school if satisfactory results are to be accomplished. For the most part education has little meaning if it is not premised upon vocational purpose. Although the vocational purpose may change, it will put meaning into the individual's educational program during its tenure.

The fact that vocational objectives might be changed as a result of effective guidance during the exploratory and occupational orientation periods could eliminate the necessity of "job changing" after entering the world of work.

Although vocational guidance is a continuous process, there are certain points in the program where pupils should

be subjected to intensive guidance activities. The recommended program for the Greenwood City Schools places one of these points between the 8th and 9th grades (see Flow Chart # 1, page 16).

The responsibility of determining specifically what these "intensive guidance" activities will include and the time of application will be placed in the hands of qualified and responsible guidance counselors. Within the structure of the total program which is recommended, however, certain definite results are expected to have accrued at this point. The most important of these expected results are:

1. Appropriate and sufficient psychological testing of all pupils.
2. The examination of individual vocational objectives in accordance with test results and other available personal data.
3. Aid in the establishment of vocational objectives for those pupils who are ready for this step.
4. The building of a personalized program of study for each pupil based on his vocational objectives and/or personal need. Such programs of study should carry appropriate emphasis on general education with an elective program which is designed to develop the vocational potential of the individual pupil whether it be in the realm of marketable skills for use upon leaving the high school, or

preparation to enter an institution of higher learning. There will be exceptions to these ideal accomplishments such as:

a. Some pupils will not have achieved sufficient maturity to be successful in the establishment of a vocational objective at this time. This mandates continued occupational orientation and exploration.

b. Pupils who are disadvantaged in one form or another should be shunted into "special needs" education at this point.

c. Still other pupils will decide to leave the public schools at this time or after completing the 9th grade.

The plan for the provision of personalized programs of study for each pupil should be initiated for the 9th grade of any given year. This should be followed by the same process for the 9th grade of each succeeding year. Each year the counselor load would be increased by the necessity of re-examining the programs of study and vocational goals which were developed in preceding years. Within a four-year period, each high school pupil would have an individualized program of study. This, in effect, would allow a period of four years to develop the counselor staff to full force.

It was stated earlier that the guidance and counseling

system would eliminate the classification of students according to traditional programs or tracks such as "college preparatory," "vocational," or "business." The following suggestions may be helpful in this respect.

1. Pupils entering the 9th grade will have been subjected to intensive guidance activities and exploration of the world of work which has culminated in the development of a personalized program of study for each pupil. Such programs of study are patterned in accord with the individual's vocational objective and/or personal need. Programs of study for those pupils who have not established career objectives will continue to emphasize occupational orientation and vocational guidance until career decisions are reached.
2. Personalized programs of study will not be "tagged" or "named"—each individual is simply a "high school student."
3. The 9th and 10th grade course work will be concentrated in the conventional general educational areas with limited opportunity to schedule elective courses.
4. All personalized programs should include significant sequences of courses which lead to the development of marketable skills or professional preparation with a common core of general education courses.

"Communication and computational skills become relevant in a context that relates them to an employment objective."[1]

5. In the final analysis pupils of similar aptitudes and vocational interests may have almost identical programs. A pupil who has elected a sequence of courses leading to professional preparation, however, may change to a course sequence leading to the development of marketable skills and vice versa (see Grades 9-12 portion of Flow Chart # 1, page 16). If this phase of the program is to be successful, pupils must be free to change from one elective sequence of courses to another at appropriate times when accepted guidance procedure indicates that their best interest will be served by such a change.
6. Changes in elective sequences of courses should in no way affect the general education requirements which should involve a minimum of 9 or 10 general education courses to be taken during the four high school years. Acceptable standards of achievement should be established and maintained in all general education courses.

The second point of intensive guidance is between the high school and the "next step" the pupil will take (see

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[1]Hugh Calkins, Annual Report, National Advisory Council on Vocational Education, U. S. Office of Education, 1969, page 2.

Flow Chart # 1, page 16). Here again the exact nature of the guidance activity and the specific time it will occur will be determined by qualified guidance personnel. It is expected, however, that the counseling service will:

1. Re-examine career objectives which have been previously established.
2. Aid in the establishment of new career objectives.
3. Aid in the placement of those who elect to enter the world of work at this time.
4. Counsel pupils relative to their plans to continue their education in a junior college or higher institution of learning.

During the 1968-69 school year, 127 Greenwood Public School students completed program requirements in cooperative and preparatory vocational education programs. Of this number, only 27 (or 13 percent) were employed full time in the occupational area they were trained for. However, 76 or 60 percent continued full time school. Intensive counseling with these students would have helped determine if the student misjudged his vocational goal, or if the vocational program he followed helped him meet his vocational objective through continued education.

CHAPTER IV

SUMMARY AND RECOMMENDATIONS

Summary

The major purpose of this study was to design a comprehensive introduction and orientation to the world of work for the Greenwood City School System. This plan was to assist Greenwood in the development and implementation of a comprehensive educational program which would serve all youth in the Greenwood separate school system.

The paramount inspiration for the study was a sincere desire on the part of Greenwood City School officials to determine what the educational needs of contemporary youth actually are and to develop an educational program to meet them. Preliminary study and consideration indicated that the most important of these needs are:

1. To participate in self-analysis to the extent of definitely identifying their aptitudes and vocational interests.
2. To become sufficiently well acquainted with the world of work to understand and appreciate its requirements for occupational success.
3. To compare personal aptitudes and interests with job requirements in occupational areas of interest.
4. To have the counsel and advice of qualified guidance personnel in making career decisions in terms

of their own aptitudes, vocational interests, personal and physical characteristics.

5. To have the counsel and advice of qualified guidance personnel in developing educational programs designed to accomplish individual career goals.
6. To attend a public school which provides an environment conducive to learning and is dedicated to the purpose of preparing each of its pupils for the next step he will take after leaving the school.

The provisions for satisfying the above needs which are fully described in the preceding report are briefly summarized as follows:

Elementary Industrial Arts. The major purpose of industrial arts in the elementary school is to introduce the pupil to the world of work and to enable the teacher to give more meaningful instruction. Activities should stem from and be integrated with the subject being taught. This should hold true in the self-contained elementary classroom (grades 1-4) as well as in the middle school departmentalized setting (grades 5-6).

Grades 7-8. The prime function of industrial arts in the last two years of the middle school (grades 7-8) is to provide students with general education experiences which are exploratory and prevocational in nature. This can be accomplished through the study of personal and social

adjustment, occupational orientation, interpretation of modern industry and multifield laboratory activities.

High School Program. Vocational education in the high school should be as comprehensive as necessary to provide full opportunity for all students to satisfy vocational objectives which were established during or as a result of occupational orientation experiences in the elementary and middle schools.

The student should be introduced to high school industrial arts and vocational education through a comprehensive study of modern industry and occupational orientation in the 9th grade.

This should be followed by mechanical drawing in the 10th grade in further preparation for their 11th and 12th grade industrial education course selections.

Industrial arts should consist of unit laboratory offerings in grades 11 and 12. Also in grades 11 and 12, vocational day trade and part-time cooperative training programs should be established on the basis of need.

Vocational and educational objectives will dictate certain types of courses to be taken by students with various goals. However, the school should not allow students to be stereotyped by placing them in a vocational track. Calkins states that:

> A separate vocational school or a distinct vocational track should be exceptions, not rules

> in a technical and changing society. . . . All students must be allowed to move in and out of vocational-technical programs and to select mixtures of vocational-technical and academic courses.[2]

Post-Secondary Education. Free transportation from Greenwood to Delta Junior College provides for systematized student mobility between the two educational systems. A close working relationship with Delta Junior College should be maintained. In most instances, it would not be advisable to introduce new vocational courses into the high school if these courses are available in the junior college vocational-technical curriculum. This coordinated effort would provide the student with a broader range of educational opportunities within which to prepare for the world of work. Calkins stated that:

> Those who do not acquire a job skill before leaving the 12th grade must have access to a full range of post-high school programs to train them for employment at their highest potential.[3]

Present versus Proposed Program. The industrial arts and vocational education plan as described in the publication entitled, Proposed Course Sequence for Industrial Arts and Vocational Education for Greenwood Public Schools, has much merit (see Appendix H for full report). This plan

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[2] Ibid.

[3] Ibid., p. 3.

makes provisions for industrial arts in grades 4-12. It incorporates vocational education into the high school and makes provisions for teaching the disadvantaged.

The proposed plan for industrial arts and vocational education, as described in this report, is not in competition with the present plan. Rather, the new plan complements and builds upon the existing program. Some of the major differences in the proposed plan are as follow:

1. Industrial arts in the elementary school is initiated in grade 1 rather than grade 4.
2. A combination of industrial arts and home economics (personal and social adjustment) is required for a full year in the 7th grade.
3. Provisions are made for the interpretation of modern industry and occupational orientation in the 9th grade.
4. Mechanical drawing is to be made available in the 10th grade so it may be taken by vocationally talented students prior to entering a trade program and by other students prior to taking advanced industrial arts courses.

Student Retention. The Greenwood High School has traditionally been academically oriented with approximately 85 percent of its graduates entering college. The total scope of the school system should be broadened. More emphasis should be placed on retention of pre-high school dropouts

and on the pre-vocational and vocational preparation of students who do not enter or remain in college.

Guidance Activities. For this proposed plan to succeed an intensive application of accepted vocational guidance procedures must permeate the entire program. In the final analysis the success of the program will be measured by the success of the student achieves in the world of work.

Acceptable guidance procedures recommend the employment of one guidance counselor for every 250 students. In the elementary grades, the counselor should spend a large portion of his time working with teachers and parents. The high school counselor should be well versed in vocational as well as in educational counseling. He should work with students as needed through their high school years.

Recommendations

A total perspective of the proposed plan for industrial arts and vocational education can be obtained by referring to Flow Charts 1-6, respectively. It would not be possible nor wise to try to implement the entire proposed program by the beginning of the next school year. A more logical approach would be to put into effect each year as much of the program as qualified staff, facilities and finances will allow. This should be done while keeping in mind and working toward the implementation of the total program of industrial arts and vocational education. This total

implementation can be achieved by a systematic execution of the following recommendations.

1. The total administrative and teaching staff should become familiar with this study.
2. All elementary teachers should take I.Ed. 6713, Industrial Arts in the Elementary School, before being expected to initiate industrial arts activities in their classrooms. This course is available through the Department of Industrial and Occupational Education at Mississippi State University.
3. Elementary industrial arts should be a part of the self-contained classroom in grades 1-4 and may be departmentalized in grades 5-6.
4. Industrial arts in grades 5-6 should be correlated with conventional subject matter rather than being considered a course unto itself.
5. Appropriate correlation should be accomplished through team planning. The planning team should include teachers of regular subject matter areas and should be chaired by the industrial arts consultant.
6. Regular full-time industrial arts teaching staff should not be used as consultants for industrial arts in the elementary grades.
7. The provision of industrial arts consultants should be considered as an essential prerequisite to the

establishment of industrial arts in the elementary schools.

8. Industrial arts in the elementary grades should not be introduced at a faster rate than elementary teachers can be prepared for the transition and all other essential provisions can be made for its implementation.
9. Overall attention should be given to occupational orientation, interpretation of modern industry, personal and social adjustment, and the multifield exploratory experiences in the 7th and 8th grades.
10. Occupational orientation and the interpretation of modern industry should receive indepth attention in the 9th grade.
11. Emphasis should be placed on mechanical drawing in the 10th grade.
12. Emphasis should be placed on vocational education in the 11th and 12th grades.
13. Industrial arts courses should be provided for those senior high school students who do not desire or cannot profit from vocational education.
14. Special attention should be given to the development of a personalized program of studies for each 9th grade student. This program of studies should be kept current and viable as the student progresses through high school.

15. Emphasis should be placed on the development of a guidance system beginning as early as possible in the elementary school and which will provide intensive guidance activities for all students upon entering and leaving the high school.
16. The guidance and counseling system should eliminate the classification of students according to the traditional programs or tracks.
17. The school system should continue to analyze employment data which will keep it abreast of industrial, business, and other occupational training needs.
18. The total program of practical arts and vocational education for Greenwood calls for industrial arts and home economics facilities in all 7th and 8th grades. Consequently, consideration should be given to re-establishing Zone III boundaries so the small enrollment problem at Williams Elementary School can be rectified.
19. The total program should undergo a formal evaluation on an annual basis in order that appropriate adjustments might be made.
20. It is suggested that the program recommended in this report be initiated in steps through pilot programs in one or two schools or grades per year.

21. All vocational education programs should be established and/or retained on the basis of employment opportunities which can be identified through occupational study of the service area of the Greenwood Schools.

If the educational program outlined in this study is successfully achieved, students leaving the Greenwood Public Schools will be prepared to satisfactorily adjust to the environment into which they will emerge—be it continuance of formal education or entrance into the world of work.

APPENDICES

APPENDIX A

GRANT APPLICATION

1. List Major Educational Needs of District.

   A. Re-examination of students' educational needs with implications for:

      1. Study of present emphasis on introduction to the world of work in grades 1-12.

      2. Needed changes in practical arts and vocational education instruction.

      3. Needed modifications in physical facilities to accommodate these changes.

2. Explain Why This Project Was Selected as the Most Pressing Need.

The pressing need for reevaluating emphasis placed on vocational education can best be explained by quoting from the annual report of the National Advisory Council on Vocational Education to the Secretary of Health, Education and Welfare. The following are excerpts from this report.

"At the very heart of our problem is the national attitude that says vocational education is designed for somebody else's children."

"We have promoted the idea that the only good education is an education capped by four years of college."

"The attitude infects the Federal government which invests $14 in the Nation's universities for every $1 it invests in the Nation's vocational education program."

"It infects students, who make inappropriate choices because they are victims of the national yearning for educational prestige."

"The attitude must change. . . . The number (of job opportunities) requiring a liberal arts college education, while growing, is increasing far less rapidly than the number demanding a technical skill."

"Those who do not acquire a job skill before leaving the 12th grade must have access to a full range of post-high school programs to train them for employment at their highest potential."

It is a desire of the Greenwood Public School Administration to set up an educational structure to reflect the philosophy of the National Advisory Council. Traditionally, major emphasis has been placed on college preparatory education. To balance this emphasis with the philosophy of vocational education as outlined by the National Advisory Council, the proposed project is being submitted.

Favorable attitudes toward the world of work should be shaped in the elementary school so young students may more intelligently plan their educational program. Occupational orientation and exploration through the practical arts can most effectively be done during the middle grades.

Pre-vocational and vocational education as well as college preparatory education should be emphasized at the high school level. These last educational phases should dovetail into career opportunities made available through post-high school employment, through junior college vocational-technical programs, and through four-year college curriculums.

The prime objective of this project is to outline ways and means which practical arts and vocational education can best contribute to the overall educational program of the Greenwood Public School System.

3. Summarize Efforts Local District Has Made Toward Meeting Needs of Proposed Project.

   A. Hired practical arts and vocational education director.

   B. Reorganized into an 8-4 class structure to better implement a pre-vocational and vocational program.

   C. Bought equipment to improve present laboratory facilities.

   D. Have plans to build additional industrial arts and home economics laboratories.

4. Describe Major Benefits to Education That Will Accrue As A Result of This Project.

   A. Locally -

   American society in its rapid develolment has bypassed large segments of its population. These

> individuals are bound in poverty and cultural deprivation because they do not possess the knowledge and skills demanded by today's technological economy. The mechanization of industry and agriculture has created a plethora of opportunity for the educated individual but has little to offer the unschooled.[1]

The school age youth of Greenwood benefiting from the proposed project should be able to adjust to the environment into which they will emerge and to employment opportunities which will be available to them in the agricultural, business, industrial, and professional segments of the economy.

B. Statewide -

The overall purpose of this proposed project is to develop an industrial arts and vocational education program for grades 1-12 which will effectively prepare people for living and working in a modernized agricultural and industrial economy. Other school districts throughout the state have similar industrial arts and vocational education needs. Consequently, with some modifications, the findings of this study should be applicable to other regions of the state—especially in the Mississippi Delta area.

5. Describe Manner in Which This Project Will Be Carried Out.

This project will be carried out by a consultant team from Mississippi State University. The team will consist of

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[1]Mitchell, Vasek, and Wallace. Industrial Arts and Vocational Education in Grades K-12 - Leflore County Schools (October, 1968), p. 3.

E. F. Mitchell, R. J. Vasek, and N. E. Wallace—all in the Department of Industrial and Occupational Education. This team will analyze the problem in light of the philosophy stated in this proposal. The analysis will consist of personal interviews, gathering data, and empirical observations. An earlier study of industrial arts and vocational education in Leflore County was conducted by the consulting team. Data and experiences resulting from this study should contribute heavily to the Greenwood project. A synthesis of all information obtained will be developed into a project report and submitted to the Greenwood Municipal Separate School District.

APPENDIX A-1

A proposal for support of Grade 8-4 organization with emphasis on orientation to the World of Work in the Greenwood Public Schools.

(Editors' Note: The Greenwood Public School Board formerly adopted the following proposal as a policy statement and subsequently authorized an investigating team from the Department of Industrial and Occupational Education, Mississippi State University, to develop a plan to implement this proposal.)

INTRODUCTION:

The Greenwood Public Schools have achieved an enviable reputation for providing quality education for the children of the community. It has maintained high ratings with the Mississippi Accrediting Commission and the Southern Association of Schools and Colleges. Traditionally, the major emphasis has been placed on college preparatory education. The school and community have taken great pride in the accomplishments of its graduates in the colleges and universities of the state and the nation.

NEED FOR CHANGE:

1. With the advent of Sputnik, weakness of the public schools of the country was pointed out which resulted in increased emphasis on subject matter, especially Science

and Mathematics.

2. A self-study by the Greenwood faculty in the early 1960's indicated that the program should be revised to decrease the number of drop-outs.

3. In 1964, an evaluation committee of the Southern Association of Colleges and Schools recommended that more emphasis be given to training in skilled and technical occupations.

LONG RANGE PLANS FORMULATED TO RE-ORGANIZE ELEMENTARY SCHOOLS, 1 - 8:

1. In the early 1960's, grades 5 and 6 were departmentalized to enable teachers to better prepare themselves to teach specific subjects.

2. Plans were made to upgrade and expand vocation subjects in high school and to extend vocational and industrial experiences down to the elementary grades.

3. The need for a 5-8 unit became apparent with increased national emphasis on the middle school concept.

(a) Junior high schools were becoming more like miniature high schools.

(b) Departmentalization of 5th and 6th grades made the 1-8 organization more necessary. (This offers an opportunity to take advantage of subject matter specialists because they can teach subjects, grades 5-8)

4. In 1967 a Vocational Education Coordinator was employed to help with plans and to co-ordinate the vocational and industrial instruction in grades 1-12.

5. In 1969, the elementary schools were re-organized

to include grades 1-8. Vocational experiences were extended to include 7th grade students.

6. It is recommended that an investigating team from the Department of Industrial and Occupational Education, Mississippi State University, be engaged to conduct a study which will result in recommendations for curriculum guidelines for grades 1-12.

7. Vocational and industrial experiences will be extended to include 5th and 6th grade students during 1970-71. These experiences will be taught and co-ordinated by a trained Industrial Arts teacher in each elementary school.

8. Crafts and experiences with small hand tools will be extended down to grade 1.

9. Without compulsory education the number of drop-outs is likely to skyrocket in the tense school situation ahead unless young people who are tempted to quit classes can be kept interested by technical or vocational instruction.

ADMINISTRATIVE STRUCTURE:

10. Grades 1-8 . . . . . Elementary

Grades 9-12 . . . . . Secondary

11. Grades 1-4. Team teaching and individual prescribed instruction.

Grades 5-8. Middle school concept. Departmentalized with ungraded classes and individual prescribed instruction. Emphasis on laboratory classes in Industrial Shops and Home

Economics Laboratories.

Grades 9-12. Flexible programs which will provide intensive counseling to help the child to develop career objectives on a year-to-year re-examination basis. It will provide for the vocationally talented as well as the academically talented. It will flow naturally through the grades and provide for changes in objectives and will provide for a child to enter the world of work and re-enter school with or without a change in his career plans.

It must provide for the child who early decides on a profession that requires university professional preparation and the child who decides on a two-year college course in careers that require vocational and technical training.

It must allow for those students who have to enter the world of work for providential or other reasons and who work a while and then decide to re-enter school for needed training and experience.

It must provide adult basic education for employed workers at all levels.

It must provide special job training for those who find it necessary to take more training to achieve advancement in their chosen careers.

There is an increasing concern for articulating vocational education with overall educational planning. In a society whose economic policy pivots on a full-employment

model and whose social and political idealism is based on a work ethic, it is compellingly clear that neither society nor the educational system which supports it can live comfortably without orderly plans to accommodate education for work.*

* *

All class work in grades 1-8 to have principles of economics correlated and integrated in course guides.

All class work in grades 1-8 to be occupationally oriented and related to the world of work. Emphasis on respect for blue collar work and vocational and technical education.

Counselors to be provided to serve teachers in grades 1-4 and children and teachers in grades 5-8 with the goal to help children who enter the ninth grade intelligently plan a high school course and even extend their thinking to Junior College, University and/or the World of Work. This would serve the child at the upper levels of the elementary school very much the way the child in high school is served today. He would be urged to give serious thought in grades 5,6,7, and 8 to the choices and options which may be his as he enters the 9th grade—just as the child in high school today is urged to make plans to choose a college and decide on preparation for an occupation.

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*From Education in the States: Nationwide Development, "The World of Work," edited by Edgar Fuller and John B. Pearson, National Education Association.

Prepared by:

Dr. W. B. Dribben, Superintendent
Greenwood Public Schools

Approved by:

Board of Education
Greenwood Public Schools

Mr. J. H. Lewis, President
Mr. W. H. Gallaspy, Secretary
Mr. James Hankins
Mr. Kenneth Bidwell
Mr. Charles Peel

APPENDIX B

Course Description For

Industrial Arts in the Elementary Schools

INDUSTRIAL AND OCCUPATIONAL EDUCATION

New Course

IED 4713/6713. Industrial Arts in the Elementary School. (3)
Three lectures. Concepts and methods of enriching elementary curricula by integrating the use of industrial tools and materials with teaching techniques presently employed at the elementary level.

APPENDIX C

Course Outline for

Industrial Arts in the Elementary School

Introductory Statement

This course in Industrial Arts for the Elementary School, IED 6713, will carry 3 semester hours graduate credit. It will meet three hours per week for 15 weeks.

The course is designed for elementary teachers who wish to enrich their curriculum by integrating industrial arts activities with methods presently employed at the elementary level. The course may also be taken by industrial arts teachers who desire to work with elementary teachers in this endeavor.

Course Aim

The aim of this course is to provide an opportunity for teachers to develop methods and techniques which will reduce the level of abstraction presently associated with many learning experiences in the elementary school. This enrichment process will be accomplished through the use of industrial tools, materials, and processes.

Course Objectives

The course aim will be satisfied through the following objectives:

1. To develop a sound philosophy concerning the need, value, and proper implementation of industrial arts activities in the elementary school.
2. To develop a measure of skill in the use of industrial tools, materials, and processes.
3. To develop concepts and techniques for the utilization of tools and materials by elementary students in individual and group activities.
4. To help teachers enrich their curriculum through industrially-oriented problem-solving activities stemming from conventional subject matter areas.
5. To develop ways and means of introducing students to the world of work through the use of industrial tools and materials.

Lessons

Orientation

Philosophic Basis

Design Analysis Process

Tool Introduction

Basic Skills

Individual Activities

Graphic Representation

Investigation of Materials

Small Group Activities

Resource Materials

Class Organization

Large Group Activities

Audio-Visual Presentation

Mass Production

Evaluation.

APPENDIX D

Typical Elementary Classroom

Industrial Arts Area

APPENDIX E

A Report Regarding Technology for Children*

By

Elizabeth E. Hunt, Consultant
Technology for Children
Route 4 - Box 792
Marion, North Carolina

The value of an elementary school industrial arts or "technology for children" program to the school and to the community.

Every school owes each child the opportunity to develop his potential to the fullest. Human potential is not limited merely to dealing competently with the 3 R's. However, our schools have traditionally placed this limitation on what they attempt to do for the child. It is urgent that the school broaden its spectrum of opportunity for children, and thereby be able to feed into its community life and economy human beings who have fully developed their potential.

Technology for children offers opportunities for children to develop in these specific ways: autonomy, problem solving abilities, speaking, writing, and reading (through the use of technical activities as a base) a feeling of self-confidence and self-worth, the ability to work with others, and an interest in learning and in school. In a school

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*This term used to refer to the program being developed by Dr. Hunt.

system which has no law requiring the attendance of its students, it is all the more important for the schools of that system to provide the kind of learning program which will lure the child to school. Having the opportunity to deal with a wide variety of tools in the classroom lures children to school. This has been demonstrated over and over with children.

Another outcome of tool/material experiences is that when children have the opportunity to deal with tools and materials they often are able to identify with what adults do in their work. Children have the opportunity to discover their own likes, dislikes, interests and abilities with regard to the world of work.

Contribution to educational process.

Education is the institutionalized management of the learning process. Therefore, the job of the school is to enhance this learning process to the greatest degree possible. Learning depends on getting information through all of the senses from the surroundings. Traditionally in school, we have provided primarily verbal channels through which the child gets information, e.g. the teacher, the book, etc. This severely restricts the amount of information to be gained from the environment. Adding tools and materials to the environment sets up problem solving situations. When children are allowed the freedom to interact or

deal with these materials in both directed and non-directed ways, the cognitive, affective and psychomotor processes (represented in broad areas of the curriculum) can be developed.

The "Design Way of Thinking".

Design means to find a simple, direct solution to a problem. In other words, it is problem solving. The "design way of thinking" is a powerful way of thinking. In using the "design way of thinking," one begins with a definition of the problem. One asks, "What is the problem?" This is the first and most difficult step. It is also the most important step. Something as simple as changing one word in the definition can make possible a better solution. Some problems are more complex and criteria for solving these problems should be developed. For example, the problem of freezing cream. Criteria for solving that problem could be: something to hold the cream, something to hold the ice, a way to mix the cream as it is freezing, a way to insulate the cold unit from room temperature. One rarely, if ever, comes up with an ultimate definition. This is why problems are always subject to new solutions. This is why the "design way of thinking" is so exciting. Virtually all problems can be re-defined; and the better the definition, the greater the possibilities of a more adequate solution.

In technology for children, the approach advocated is

that of using the "design way of thinking." This means that, for example, instead of children replicating solutions to problems such as freezing cream and thus constructing an ice cream churn, they would be looking at what the problem really is and developing solutions for the problem as they have defined it. In the case of the ice cream freezer, one solution developed was: something to hold the cream—a plastic bag; something to hold the ice—a larger plastic bag; a way to mix the cream as it is freezing—change the position of the freezer every two or three minutes; a way to insulate the unit from room temperature—two bath towels sewn to form a bag-like container.

Teachers should not feel uncomfortable when children are exploring tools and materials on the basis that they have not structured the learning situation. Children learn much through discovery. Problems are inherent in dealing with tools and materials as they explore the nature of the materials. One six year old in attempting to drive a nail through tempered masonite could not get the nail to go through. On failing to drive it through by hitting the head of the nail, he turned the piece over with the nail still in and proceeded to hit the masonite. The nail came through.

Teacher Problems.

When the elementary classroom teacher assumes the major responsibility for implementing a program of technology for

children within the self-contained classroom, certain problems arise more frequently than others. First, tool/material media are unfamiliar to most elementary teachers. They feel insecure about using them. This feeling of insecurity is extended further in that they do not know how to guide the learning of young children using this media. They feel they do not know enough about the tools or cannot handle them well enough to "teach" children how to use them. Further, they are not quite sure how this program should be "administered" in the classroom. Frequently asked questions are: "How many hours per day?" "How many days per week?" "How many children work with the tools at one time?" There are no pat answers to these questions. However, there are some guidelines for obtaining answers as children explore the tools.

One guideline is to observe the children when they are given the opportunity to explore freely. What kinds of things do children attempt to do with the tools? Cut a board? Pound a nail? This is typical of the first stage children go through in handling the tools in a non-directed situation. Do they put two or three pieces together in a manner that suggests an item to them and then attempt to complete whatever has been suggested? Example: Two pieces of wood the children have fastened together suggest the body and wing of an airplane; they then add the tail. A guideline in connection with this type of exploration is not to become

overly anxious about the amount of time the child spends in this activity, particularly in terms of the visible results. As long as the child appears to be satisfying his own curiosity and is not hurting himself, others, or the tools, the exploration is likely to be legitimate in terms of what the child will learn about the tools and materials. One indication that the child may be ready to give some thought to "making something" is when he begins structuring his own exploratory activity in terms of a "product." (It is suggested particularly in kindergarten and first grade that scrap wood and other scrap material be used for exploration.) One problem most teachers encounter with regard to this approach is that they find it difficult to relinquish their roll of directing all of the activity. They find it threatening to allow for the non-directed activity of children.

The guideline of having children initiate their own activities applies to all grades K-6. The teacher will be of greatest help for problems the children encounter in the activities they have initiated. The extent to which this can be done depends upon the style of the teacher. The teacher has the right to begin where she is in managing a class and develop toward working this way with children. If the teacher is suddenly asked to change her way of operating with children, her discomfort in the situation is likely to negate the effects of using this approach.

The teacher will encounter these technical problems:

securing materials, having materials pre-cut, identifying appropriate materials, repairing tools, and obtaining petty cash for materials needed right away. She will need outside reference materials and information, assistance in classroom organization, and an awareness of safety. It is necessary for her to realize that the curriculum is inherent in what the children are doing and be able to use the children's activities as a base for developing language, counting, measuring, etc. In addition, she needs to have in-service workshops to help solve problems that occur during the school year.

The administrator's tasks and problems.

An administrator in charge of a school where technology for children is being implemented should make the following budget provisions:

1. An annual allocation for a stockpile of commonly-used materials.
2. A petty cash fund for materials which cannot be anticipated. (Not being able to obtain materials when special needs arise can seriously deter the benefit to be derived from a learning episode.)

The administrator should establish both policies and procedures for purchasing materials and/or securing materials from the stockpile. The administrator (especially in a pilot program) should meet often with his teachers to ascertain

what the problems are. This should be done in an atmosphere of mutual support and helpfulness in order to provide a chance for the teacher to air her problems openly with the other teachers without fear of being criticized either for having the problems or not being able to solve them. The administrator should use these meetings to become thoroughly aware of the problems and thus be able to communicate them to those in key positions of implementing the program in other schools. The attitude of "Let's try this out, discover what the problems are and see how we can solve them together" will go a long way toward the successful implementation of the program.

The administrator should also be prepared to explain the program to parents. If a thoroughgoing two-way communication exists between administrator and teachers, conflicting explanations of the program to parents will be avoided.

Parents' reactions.

Possibly one of the primary concerns parents will have when children use school time for working with tools and materials is that valuable time is taken from learning to read, write, spell, add, etc. Parents might also interpret the program as one designed to "make carpenters or mechanics out of the children." Parents of lower socio-economic status may be particularly sensitive about this if they feel the school is providing something less for their children

relative to "middle class" values. When a program of technology is initiated, meetings with parents (on some regularly scheduled basis) for better understanding of the program is advised.

One of the best safeguards against parent mis-understanding about the purpose and effectiveness of such a program is for the teachers to understand how the program enhances the total development of the child—language and otherwise. It has been found as a result of such a program, the child wants to attend school and finds "success" with tools and materials. This is a better base for learning other things and gaining a feeling of confidence and self-worth.

Assuring appropriate "success" on the part of all pupils.

"Success" is an adult-oriented word. Success is usually measured in terms of expectations. Children are likely to take on challenges they feel they can handle or cope with and, thus, in a sense, feel "success." Many times they explore and discover not for any particular goal or outcome. Therefore, the "success" or "failure" of the venture does not exist. However, when adults have expectations of children and children sense they should meet them and are not able to, a feeling of "failure" is likely to develop. This feeling can be a detriment to the entire learning process. The better approach is to be appreciative of what children

do accomplish on their own, and provide continued support for whatever they undertake to do.

How important is "pre-vocational" interest at the elementary school level?

In order to evaluate the importance of any "pre-vocational" interest at the elementary school level, the following should be considered. The child is a generalist. He is initially interested in anything and everything. He gradually becomes more selective. Those areas of interest he selects are usually the areas in which he has developed a greater depth of competence. Also, children are ego-centered. That is, they want to find out what they can do and are only secondarily, if at all, interested in getting information about what others do in the "world of work." Therefore, pre-vocational programs must do more than merely provide information about work. They must afford opportunity for first-hand experience.

Since children do have broader interests initially, it is difficult to predict which of these interests may be important in terms of permanency. All pre-vocational interests are important if they lead to broad exploration and first-hand experiences. For the exploration of many interests provides a better base for an intelligent decision regarding one's vocation.

APPENDIX F

Industrial Arts in the Wilkes Elementary School

By

Mrs. Kathryn Thompkin
Elementary Teacher

My first impression of industrial arts in the elementary school was, "Why in the elementary department of the schools?" To be truthful, it was rather frightening to think of using these unfamiliar tools myself, not to mention the idea that first and second year students would be using them.

Later, after working in the shop along with the instructors and other experienced people, I learned by observing and participation how to handle the various tools.

I also found that after these tools are introduced to the pupil as to their danger if misused, it prepared the pupil for use as well as care and careful handling of the tools. After becoming acquainted with all of the tools, a tool panel was placed in each teacher's room to use whenever there could be some correlation. In my teaching situation, this happened quite often.

My first experience was using the tools in language arts. After each child learned the name of the tools and their use, they were asked to construct sentences using the name of these tools. These were second-year students. They also were requested to write compositions using the name of one or two of the tools they had learned about.

In math, we were in the process of studying time telling. We needed something concrete that the child could touch and really move. They could do this with the hands of a clock. They sketched the clock, planned how large the clock would be, and what tools would be used to construct this clock. With my help they proceeded to construct the clock.

In science we studied a unit on plants. To compare good soil with poor soil, we needed boxes. The course I had taken prepared me to assist them in constructing these boxes.

In social studies we studied a unit on ways of travel. With my assistance, the children constructed the different cars of a train that we studied about. The first step in building this train was to discuss the different cars and their shapes. Since the class included boys and girls, they could not all work with the cutting of material at one time. Therefore, they had to be grouped. While the boys selected the material to be used, the girls drew pictures or sketched the different cars. These cars were made from pieces of 2" x 4"'s cut in the shop. The wheels were cut from the handle of a broom. The pupils took turns cutting and assembling these pieces. They were very excited. Since we only worked with this unit during the social studies period, it took about a week to complete the train. We placed the train in an art exhibit.

For our next unit in social studies we were studying about the neighborhood with different buildings. They were so motivated by the success of their train, I could hardly help them gather material fast enough! We decided to use cardboard boxes for the various buildings. We used tempera paint to paint these buildings. We needed some material to build a foundation for this city. We asked our consultant what to do about it. He suggested that we use a heavy piece of Beaver Board. They painted the streets and stop signs, made furniture from pieces of wood, and painted pictures of clothing for the clothing stores. This proved to be fun as well as a learning experience for the pupils. It also promoted greater attendance in school.

In all grades there are some pupils whose abilities are somewhat limited, and whereas they might not be able to write compositions, they might be able to contribute to the class through creative expression. For example, by drawing some of the things they would like to make, these pupils became motivated to try to use some of the tools.

I think industrial arts on the elementary level is very essential. I think industrial arts provides a new dimension to the student's personality and broadens the boundaries of his experience. In order for an individual to become interested, there must be some type of motivation to influence the child. From my experiences in using industrial arts as it correlates with other subjects, its aim is to

give the pupil a background that will help him fit into the world of work, which is the basis of our industrial society.

I would like to see elementary industrial arts placed in all schools. I think the program would enhance the learning of the child combined with the Teacher and the child's imagination and creative ability.

Within the classroom, the student makes use of materials such as wood, metal, plastic and finishing materials. He cannot use such materials without wondering where they come from. He may be interested in tracing the source of these materials. If he does, he will open up a view of history and geography that will give him an entirely different idea of the world in which we live. The student also receives a deeper grasp of such subjects as arithmetic and science. He sees why he needs to know fractions, decimals and the use of denominate numbers in actually working with tools and materials.

These are only a few of the ways industrial elementary arts can be correlated. There are countless other ways a teacher and her class can make learning more enjoyable and meaningful through the use of industrial arts.

APPENDIX G

CHAPTER V OF NDEA REPORT

INTERPRETATION OF MODERN INDUSTRY

(National Institute held at
Mississippi State University in 1968)

Chapter V

Summation of Laboratory Activities

The change from making individual products to mass production by assembly-line techniques prevails in today's modern industry. Interpretation of modern industry in the classroom is one of the most important objectives of industrial arts. An effective means of conveying this industrial interpretation to students is by teaching a unit on industrial organization and production. During the institute, the class simulated an industrial organization and assigned each participant a part to plan in this industrial structure. Each participant learned the basic structure of an industrial organization and acquired a knowledge of the mass production process.

Two and one-half hours daily were devoted to organizing an industry and producing a marketable product. Involving the participants in an atmosphere similar to an industrial organization provided them with an opportunity to gain meaningful knowledge about modern industry. This involvement should enable the participants to relate the knowledge gained to their industrial arts students.

Objectives of Mass Production

A unit on industrial production should be an integral part of an industrial arts program. The following objectives representing the aims of mass production in industrial arts were developed by the participants.

1. To develop an understanding of how industry organizes men, materials, and tools for product development, production, and distribution.
2. To urge students to be inventive and to provide an industrial setting for problem solving.
3. To develop an understanding of mass production, its values, and its place in our society.
4. To develop an understanding of a free enterprise system by means of advertising, marketing, and selling.

Proposals to the Administration for Including Mass Production in Industrial Arts

In some cases, administrators object to the idea of organizing a class into a mock industry. A few administrators feel that the routine schedule should not be disrupted by including innovative ideas which require much classroom time. To some administrators, using a school-sponsored activity as a means for making a profit seems unethical.

During the institute, four proposals for including mass production as an integral part of the industrial arts

program were prepared by the participants. These proposals will be used by the participants to inform their administrators of the need for mass production in their industrial arts programs.

Selecting the Board of Directors

In the establishment of an industry, a group of people, usually the ones who finance the industry, meet in an attempt to discuss major problems. After major difficulties are resolved and decisions reached, policies pertaining to the industrial organization are formed along with the hiring of key personnel who help in organizing the industry.

In the institute, one participant was chosen by each of the four groups to serve as a board member. One of the board members was chosen to act as the chairman. Some of the major concerns of the board were: naming the industry, incorporating, policy making, and selecting a plant manager and a personnel director.

Selecting a Product to Mass Produce

The selection of a product to mass produce is one of the first phases of involving the industrial arts class in a mock industry. Many factors are involved in the selection of a product which will ultimately be mass produced. Such factors as market value, cost, skills, equipment, materials, storage, time, and class enrollment must be

considered. Also, thought should be given to whether or not a better understanding of industry will evolve as a result of the manufacture of the product selected.

The objective of an industrial organization within a school is not to mass produce a product per se. Through this activity, the student should gain a better understanding of the materials, problems, tools, and processes of industry.

The institute staff outlined a set of limitations for the item to be mass produced by the participants. Considering these limitations, each participant was asked to prepare a set of drawings for an item which he believed could be mass produced.

From each of the four work groups, two designs were chosen. These designs were then studied by the class. During the design study, a design analysis was made of each drawing. The class was then asked to vote on the design which would ultimately be produced by the institute participants.

Financing the Product

To simulate an industrial situation, 50 per cent of the manufactured products were financed by the participants. The mass-produced products were sold to staff members and other university personnel. After completing production, the products were delivered to buyers, and

dividends were awarded to stockholders according to the amount of stock purchased.

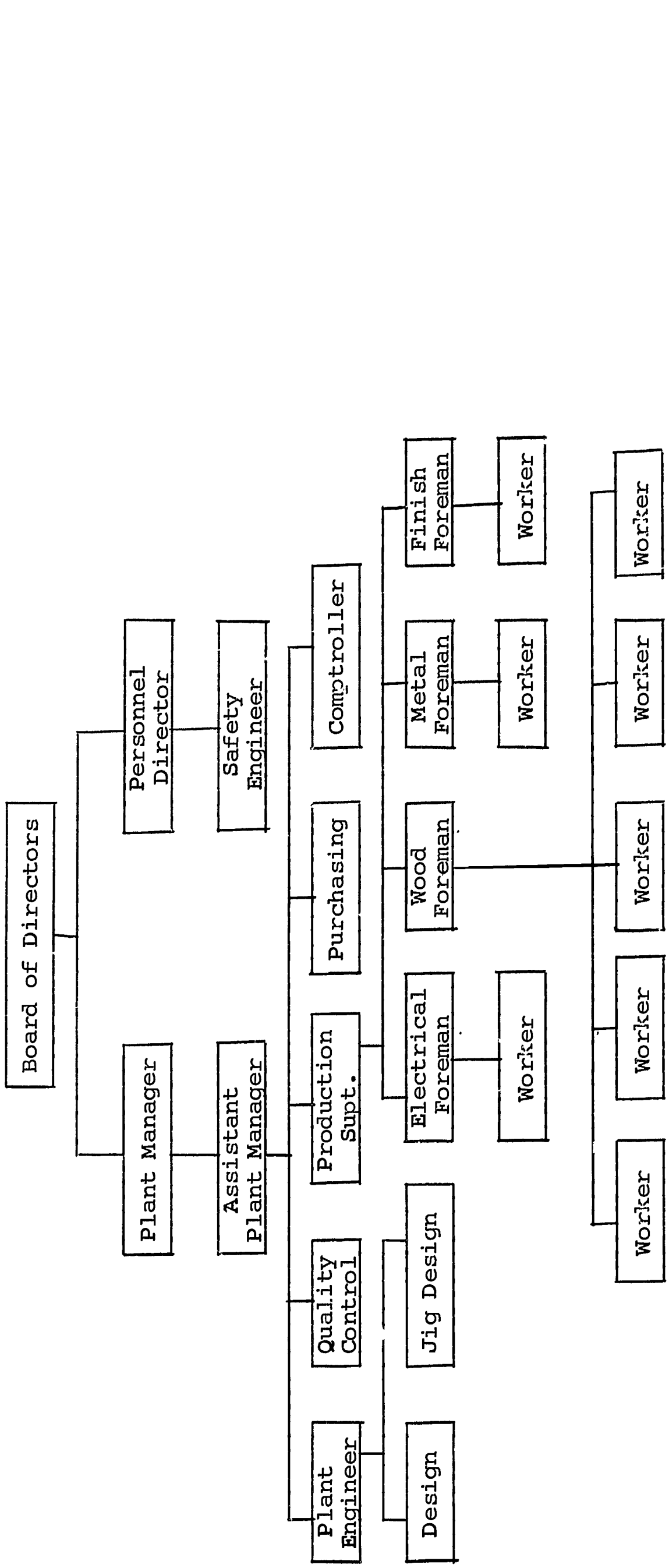
Plant Organization

The success of an industry largely depends on its organizational structure. An organizational chart is used to implement this structure. The complexity of this chart depends upon the size of the industry and the nature of the products manufactured. After the organizational chart is developed, it is then necessary to hire personnel to fill the various positions.

To simulate an industrial structure in the institute, the plant manager and the personnel director were chosen by the board of directors. Other key personnel were in turn selected by the plant manager and the personnel director. Employment application forms, secured from industry, were given to the participants by the personnel director. The information acquired from the employment forms helped in placing applicants in the various jobs.

Prior to making job assignments, an analysis of the product has to be developed by the engineering department. The product analysis was in turn used to determine personnel needs indicated in the organizational chart shown on the following page.

MSU INDUSTRIES, INC. ORGANIZATIONAL CHART



Committee Assignments

Prior to production, committees were established to resolve many production details. Each participant was assigned to one of three committees—engineering, production, or business. Each committee had a particular function during the pre-production phase.

The engineering committee consisted of the head engineer, the production engineer, the drafting department, and the set-up department. The function of this committee was to make detailed drawings, construct an organizational chart, make an analysis of the proposed product, and make the necessary jigs and fixtures. Moreover, it was this committee's responsibility to plan material flow charts, route charts, and the plant layout.

The production committee consisted of the production manager, foremen, and operators or workers. During the pre-planning stage, this committee functioned as a research team with the responsibility of making the pilot product.

The third major committee was business which consisted of the comptroller and the purchasing agent. During the pre-planning phase, this committee sold stock, advertised, made sales, and purchased materials.

Each of the three major committees functioned simultaneously for approximately nine hours. After all committee work was performed, each committee reported the results of their activities to the total group. Also, the pilot

product was presented by the production committee. Final approval was given for the product and production was ready to begin.

Manufacturing the Product

The production chart, which was prepared by the personnel and engineering departments, was explained to the class by the personnel director. Job assignments, which were made by the personnel director were included on the organizational chart. After a thorough explanation of the organizational structure by the management staff of the mock industry, the assembly line was then established with each participant performing a particular job.

At this point, all activities were centered around the product being manufactured. As difficulties arose, the managerial staff suggested solutions to the problems. Consequently, efficiency in work and in quality was maintained on the production line. The following paragraphs describe the departments, positions, and jobs within the industrial organization.

The plant manager was in charge of the total plant operation. By working directly with the department heads, he was able to correlate the operations of the plant, thus adding to a smooth flow of materials and operations during production. The plant manager also maintained the organizational structure and made decisions for the company.

The personnel director was responsible for staffing the plant. Positions and jobs were assigned after participants had filled out application forms. The personnel director developed such forms as time cards, job description forms, and requisition forms.

With the help of the comptroller, the personnel director developed a pay scale and prepared the payroll, taking into consideration taxes, social security, and other deductions. Personnel relations and publicity for the plant also were the responsibilities of the personnel director.

As in every industrial organization, safety proves to be an important factor. The institute's safety director formulated rules and regulations for the plant personnel to use in performing their various duties. A study was made by the safety director to locate hazardous and unsafe practices which existed in the plant and then developed means to eliminate these practices. Information sheets were given to all employers and employees by the safety director's office. Periodic checks by the safety director were made to see that these rules and regulations were carried out. A variety of motivating devices were used to encourage safety.

The comptroller of the industry was responsible for the financial business of the organization. His responsibilities included the preparation of the financial statements

and cost schedules. Selling stock, selling the products, and delivery of the products were the joint responsibility of the comptroller and the purchasing agent.

The purchasing agent had the responsibility of securing the material needed to manufacture the products. Requisitions from the various departments were sent to the purchasing department. Supplies were let for bids and later purchased. Some supplies had to be purchased from other localities because needed items could not be purchased locally. A process inventory control chart was developed by the purchasing agent. The purpose of this chart was to show quantity ordered, date ordered, date received, and delivery period of each set of materials.

The duties of the quality control department were to insure that the manufactured product met standards and specifications. The standards were defined before procedures for the construction of the product were set up. Other duties of the quality control department were as follows: set up quality check points throughout the plant, determine the best use of raw materials, reject all products that did not meet the specifications and make sure all rejects were corrected before they were accepted.

A normal curve chart which served to check one part for tolerance was used to determine quality for a specific piece of stock.

The engineering department was responsible for

designing and solving problems related to the manufacture of the product. This department began work by developing drawings which were later printed on a blue-line printer. In conjunction with the production department, the assembly line was set up and route charts developed. Other pre-production performances of the engineering department were: developing a flow chart, designing stock certificates and company trademarks, and drawing other charts and graphs. See the following page for an example of the stock certificates used.

The engineering department studied various means to help improve and increase production. Such means as careful observation, discussions with the production manager and other department heads, and motion and time study charts helped to facilitate production. As a result, a process flow chart (chart to balance the flow of materials from one operation to another) and a Gantt chart were developed. The Gantt chart was used to determine order and delivery dates of materials. The time study also helped determine the beginning and ending dates of production.

Setting-up was also the responsibility of the engineering department. Additional duties of this department were to design and construct jigs, fixtures, and other holding devices. These devices proved to be vital for increasing production and for the standardization of parts.

Jigs, fixtures, and other holding devices aided the

No. 1 Shares 1

MSU INDUSTRIES, INCORPORATED

STOCK CERTIFICATE

This certifies that John Doe is the owner of One (1) fully paid and non-assessable common shares of One Dollar ($1.00) value each of MSU Industries, Inc., transferable on the books of the corporation in person or by duly authorized attorney upon surrender of this certificate properly authorized.

In Witness Whereof, the said corporation has caused this certificate to be signed by its duly authorized officers and sealed with the seal of the corporation.

This 15th day of June, A.D., 1968.

Corporation Seal

/ss/ Frank L. Smith
President of the Board

/ss/ David Sanders
Board Member

following operations: drilling, mortising, shaping, routing, cutting, and assembling. There was a total of 10 devices used for improving production. They were as follows:

1. Device to mortise 1-1/4" x 1-3/4" x 1/2" hole in base for inserting shaft into base

2. Device to drill 3/8" hole through side of base for cord insertion

3. Device to hold shaft and handle in place to drill hole in side of shaft for pivot of handle

4. Device to drill hole in center of mortise in base

5. Device to hold tank in place for assembling on base

6. Device to regulate laterial movement of the shaft when mortising for handle anchorage

7. Device to hold handle when drilling 1/8" hole for beaded chain

8. Device to hold shaft when drilling 3/8" and 3/4" hole through center of shaft vertically

9. Device to hold shaft and spout when assembling shaft and spout

10. Device to hold blanks for mortising out tank.

The production department was directly responsible for the construction processes. This department was supervised by the production manager who was responsible for regulating production parts, determining performance of production workers, working with engineering to improve production, establishing lines of communication between workers and top

management, and keeping a production chart of the parts produced.

The production department was divided into the following areas: the machine and assembly area, the electrical area, and the finishing area. A foreman in each of these areas was responsible for direct supervision, writing job descriptions, training employees, directing flow of materials, and making requests for needed supplies and equipment.

The machine and assembly area was responsible for shaping and assembling parts. Eight machines and nine assembly operations were utilized. A route chart was used in the machine area.

The electrical area was divided into two parts: a sub-assembly and a final assembly. In the sub-assembly, lamp sockets, nipples, and cords were assembled. In the final assembly, the sub-assembly was attached to the product.

The finishing area was responsible for obtaining the proper exterior appearance of the product.

Each worker in the three production areas was responsible for diligent and efficient work, for safe performance at his work station, for care in using tools and equipment, and for making suggestions for product improvement.

Closing the Industry

At the close of the laboratory activities, products were delivered and dividends awarded. The stock owners received dividends in accordance with the number of shares of stock purchased.

A follow-up study and discussion of the planning, production, purchasing, and selling phases were conducted. During this discussion period, each department and participant gave an account of the experiences encountered during production.

APPENDIX H

GREENWOOD'S PLAN FOR INDUSTRIAL ARTS AND VOCATIONAL EDUCATION

Proposed Course Sequence
for
Industrial Arts and Vocational Education
for
Greenwood Public Schools

The following recommendations are proposed for grades 4 - 8 in the following schools:

Bankston	Davis
Williams	Stone Street
	Threadgill

* *

Grades 4-5-6 Elementary Industrial Arts (All Students)

Elementary industrial arts consists of experiences with basic tools, materials and processes integrated with conventional subject matter areas and taught by the classroom teacher. All activities stem from problems or ideas encountered or inspired through normal teaching procedures. Tools, materials, and work areas are to be provided in each classroom. An elementary supervisor will be assigned to the task of providing assistance in integrating industrial arts activities into the existing elementary curriculum.

Seventh Grade-General Handicrafts
(One Semester Required of Boys and Girls)

The handicrafts are defined as that area of industrial arts which provides for creative activity as well as a study of industrial materials and products. Handicrafts will be confined to ceramics, plastics, mosaics, art metal, drawing (freehand), and graphic arts. The general handicrafts laboratory seeks to create interest, inform, inspire and guide by bringing material and fundamental processes of industry into the school life of the pupil. Projects and problems are employed which provide for creative thinking and doing through individual and group projects.

Several days will be set aside to afford the students an opportunity to explore different occupational areas such as business and office occupations, marketing, industry and health occupations.

8th Grade-Composite General Shop
(Required for all Boys)

The composite general shop provides pupil experiences in the areas of woodworking, metal working, basic electricity-electronics and power mechanics. Planning, drawing, and safety will be brought in during a period of orientation at the beginning of the school year. Three weeks will be reserved at the end of the year for an "Introduction to Industrial Procedures" through which the student will be exposed to corporation activities, including administration,

marketing, engineering, design and drafting, production, quality control, sales and consumer. A combination laboratory-classroom equipped with machines, tools and materials to accommodate a maximum of 24 students per class with the lab area being a minimum of 100 square feet per pupil will be needed for this program. The instructor should be certified in industrial arts.

Regular Home Economics
(Required for all Girls)

The main objective in regular home economics will be to train students in the various phases of family living. Units in family relations, home nursing and first aid, housing, child care, consumer education, personal grooming and equipment selection will be taught. Combination classroom-laboratories for cooking and sewing should be provided. The teacher must be certified in home economics.

THREADGILL HIGH SCHOOL GRADES 9-12

Grades 9-10 Industrial Arts General Metals
(Elective - 1 Unit)

The general shop in a major area is one in which the subject experiences are confined to one field of industry. The laboratory differs from the composite shop in that all units of work are definitely a part of a given field of industrial work. This curriculum will be confined to the tools, materials and processes of the metal-working industry.

The teacher should be certified in industrial arts. A laboratory equipped with machines, tools, and materials should be provided with a minimum of 2400 square feet to accommodate a maximum teaching load of 24 students.

Grades 11-12 Mechanical Drawing
(Elective - 1 Unit)

Mechanical drawing is the universal language of industry. The ability to describe the shape and size of objects through drawings and to interpret drawings made by others is helpful to anyone regardless of his vocation.

Mechanical drawing can be taught in any regular classroom equipped with the proper furniture and equipment. Class size should not exceed 24. The instructor should be certified in industrial arts.

Grades 11-12 Building Trades
(Elective - 2-4 Units)

The building trades program is designed to prepare a student for employment in any one of the following occupations: bricklaying, carpentry and plumbing, with some practical experience in electrical wiring.

The teacher should have a minimum of 2 years work experience beyond the learners level and have finished high school.

The shop should be equipped with the type of equipment, hand tools, and materials that a workman in any of the

mentioned occupations would normally work with. The shop should be a minimum of 2400 square feet.

Grades 9-12 Vocational Home Economics (Elective - 1-4 Units)

The primary concern of home economics in the high school is the individual and how she can live most successfully in the home and in the community today and in the future. Resumé of areas taught include consumer education, family living, management and family economics, foods and nutrition, housing, clothing and textiles, child development, personal grooming and dynamic living. The teacher should hold a valid vocational license and be certified in home economics. A combination classroom cooking and sewing laboratory should be provided and equipped with the necessary equipment and materials typical of that used in the modern home.

GREENWOOD HIGH SCHOOL GRADES 9-12

Grades 9-10 Industrial Arts General Woods (Elective - 1 Unit)

The general shop in a major area is one in which the subject experiences are confined to one field of industry. The laboratory differs from the composite shop in that all units of work are definitely a part of a given field of industrial work. This curriculum will be confined to the tools, materials and processes of the woodworking industry. The teacher should be certified in industrial arts. A laboratory equipped with machines, tools, and materials

should be provided with a minimum of 2400 square feet to accommodate a maximum teaching load of 24 students.

Grades 11-12 Mechanical Drawing
(Elective - 1 Unit)

Mechanical drawing is the univerals language of industry. The ability to describe the shape and size of objects through drawings and to interpret drawings made by others is helpful to anyone regardless of his vocation.

Mechanical drawing can be taught in any regular classroom equipped with the proper furniture and equipment. Class size should not exceed 24. The instructor should be certified in industrial arts.

Grades 10-11-12 Metal Trades
(Elective - 2-4 Units)

The metal trades program is offered for those students who do not plan to continue their education beyond the secondary or post secondary level. This program is designed to prepare a student for entrance into the industrial machine and welding trades. Students that participate in this program must be a minimum of 16 years of age. They must be in the training program for three consecutive clock hours five days a week for one school year.

A shop area with a minimum of 2400 square feet will be provided and equipped with the type equipment and supplies that a worker in the industrial machine and welding trades

would normally use on the job.

The teacher is required to have a minimum of two years work experience above the learners level in his teaching field and have finished high school. He must also hold a valid vocational license.

Grades 11-12 Diversified Occupations
(Elective - 2-4 Units)

The students that participate in this program are trained to enter the world of work upon completion of secondary or post secondary education. The program is designed to develop skills through on-the-job training in the different occupations in trades and industry, health, agriculture, marketing and distribution.

The student must be a minimum of 16 years of age and secure a work permit for on-the-job training. He will receive one hour of related instruction per day in the classroom and a minimum of 15 hours per week of on-the-job training.

Through a combintation of on-the-job training and related information the student should develop desirable work habits and attitudes and acquire both general and technical knowledge in a worthy occupation of his choice.

The teacher is required to have a minimum of 2 years work experience beyond the learners level in one of the trades mentioned and hold a college degree in distributive education, marketing, or trade and industrial education. A

classroom should be provided for related instruction.

Grades 11-12 Vocational Office Training
(Elective - 2-4 Units)

The purpose of this course is to provide opportunities for students to develop skills through coordinated instruction of related activities in the classroom to actual on-the-job training. The student must be a minimum of 16 years of age, secure a work permit and should have taken prerequisite business courses.

The student will receive one hour related instruction per day in the areas of clerical and secretarial training and a minimum of 15 hours per week of on-the-job training in a related occupation.

The teacher is required to hold a college business degree and have a minimum of two years work experience beyond the learners level. A classroom should be provided and equipped with equipment and supplies typical of that used in similar occupations.

Grades 9-12 Vocational Home Economics
(Elective - 1-4 Units)

The primary concern of home economics in the high school is the individual and how she can live most successfully in the home and in the community today and in the future. Resumé of areas taught include consumer education, family living, management and family economics, foods and nutrition, housing, clothing, textiles, child development,

personal grooming and dynamic living. The teacher should hold a valid vocational license and be certified in home economics. A combination classroom cooking and sewing lab should be provided and equipped with the necessary equipment and materials typical of that used in the modern home.

ALL SCHOOLS
Special Needs (Vocational)

Special needs programs will be organized and offered at the grade level or levels where there is the greatest need. These programs are made available for those students not making progress in school for any or all of the following reasons: poor readers, loss of interest, home conditions are not conducive to school attendance, financial limitations, inability to grasp higher academic studies but with great potential in manual skills. Trades classes will be taught three hours per day and an academic class of basic education will be taught two hours per day. If taught at the high school level, 2-4 units credit may be awarded. These programs may be directed at boys or girls. The teacher must meet the same requirements as any other person teaching in a vocational program.

Adult Education

From time to time different groups in the community ask that courses be offered for the purpose of up-grading skills of employees in the areas of business and office, health,

trade and industrial, marketing and distribution, and food service occupations. A specialist is employed on an hourly basis for the duration of the course. Upon completion of the program, participants are issued a certificate.